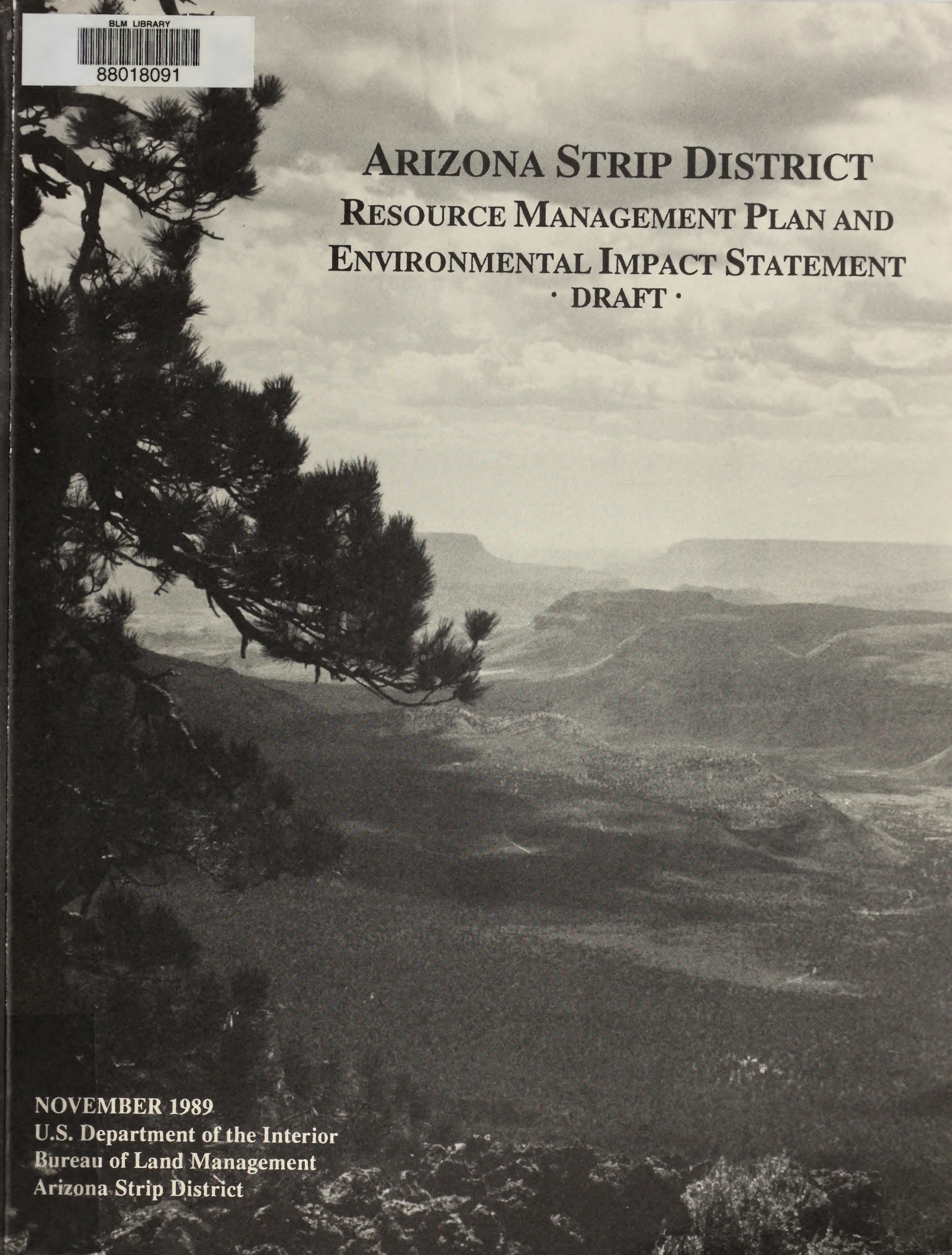


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A black and white photograph of a desert landscape. In the foreground on the left, a dark, silhouetted pine branch extends into the frame. The background shows a vast, hazy desert valley with rolling hills and distant, flat-topped mountains under a cloudy sky.

ARIZONA STRIP DISTRICT RESOURCE MANAGEMENT PLAN AND ENVIRONMENTAL IMPACT STATEMENT • DRAFT •

NOVEMBER 1989
U.S. Department of the Interior
Bureau of Land Management
Arizona Strip District

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Arizona Strip District

APPENDIX

ARIZONA STRIP DISTRICT

RESOURCE MANAGEMENT PLAN AND ENVIRONMENTAL IMPACT STATEMENT

Draft (X) Final ()

The United States Department of the Interior, Bureau of Land Management

1. Type of Action: Administrative (X) Legislative ()

2. Abstract: This Draft Resource Management Plan and Environmental Impact Statement describes and analyzes four alternatives, including a No Active Alternative, for managing the public land and resources in the Arizona Strip District, Arizona.

3. Comments have been requested from the individuals, groups and agencies listed in Chapter V.

4. For further information contact:

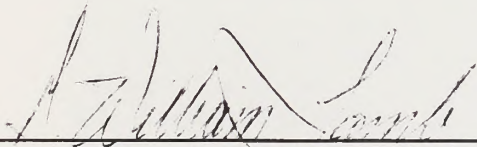
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5. Draft filed with the Environmental Protection Agency: NOV 29 1989

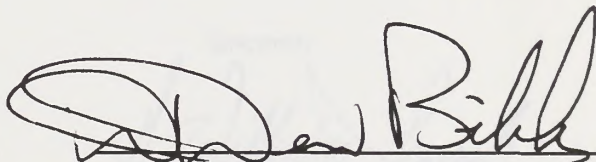
6. Comments on this Draft RMP/EIS must be postmarked no later than: MAR 12 1990

Recommended:

Approved:



G. William Lamb
District Manager
Arizona Strip District Office



D. Dean Bibles
State Director
Arizona State Office

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1792 (010)

Dear Reader:

This draft Resource Management Plan / Environmental Impact Statement (RMP/EIS) for the Arizona Strip District is presented for your review and comment. This document outlines four alternatives for managing public lands on the district. These alternatives are designed to guide future management and resolve land management issues that were identified during the early stages of the planning process.

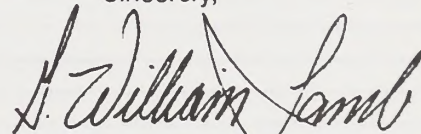
We welcome your comments on the content of this document. Those comments addressing the adequacy of the draft RMP/EIS will be responded to in the final. Specific comments will be most useful. We encourage you to submit your comments in writing. In order to be considered in the final RMP/EIS, comments must be received within 90 days of the Federal Register notice of availability.

Please keep this copy of the draft RMP/EIS, as an abbreviated final RMP/EIS may be issued in accordance with Council on Environmental Quality regulations. Copies of the final RMP/EIS will be sent to all those who provide comments on the draft or request a copy.

All comments should be sent to:

Dennis Curtis
Bureau of Land Management
Arizona Strip District
390 North 3050 East
St. George, UT 84770

Sincerely,



G. William Lamb
District Manager

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SUMMARY



SUMMARY

INTRODUCTION

This draft resource management plan and environmental impact statement (RMP/EIS) identifies and analyzes alternatives for managing public lands and resources administered by the Bureau of Land Management (BLM) on the Arizona Strip District. The RMP/EIS will provide guidance for management of public lands, associated resources and diverse multiple uses on the district over the next fifteen years.

BLM's land use planning is accomplished under the authority of and in accordance with the Federal Land Policy and Management Act of 1976 (FLPMA). This draft was prepared by an interdisciplinary planning team composed of a variety of specialists and the district management team. The plan is the result of a concentrated step-by-step planning effort over the past two years and substantial public involvement and consultation. The BLM Arizona State Office also provided technical assistance and review.

THE PLANNING AREA

The planning area, hereafter referred to as the district, encompasses about 2.8 million acres of public lands in the northwest corner of Arizona known as the Arizona Strip (Map S-1). Isolated from the rest of Arizona by the deep canyons of the Colorado River, this area is geographically, culturally, and economically linked with southern Utah. The district encompasses the northern portion of Mohave and Coconino Counties, and mainly includes large blocks of public lands administered by BLM (Map S-2).

A vast and interesting area, the district is topographically and ecologically diverse and rich in natural and cultural resources. Important forage, wildlife, mineral, archaeological, wilderness, scenic, recreation, watershed, forest, woodland, and other values are present on these public lands.

This distinctive part of Arizona has a special appeal to many people and is unique in many ways. The isolated location north of the Grand Canyon limits accessibility and human use and enhances the quality of remote and backcountry settings. Spectacular scenic vistas are common. Due to the remoteness, solitude can be found among rough, scenic canyons and occasional stands of ponderosa pine.

There are few communities within the district and the human population is low. The only permanent residents live in small communities near the Utah and Nevada borders and along Highway 89A in House Rock Valley.

Three highways cross the northern tier of the district. No paved roads extend into the interior, but over 5,262 miles of unpaved roads and truck trails traverse the area. Few roads extend into the rugged and isolated southern tier.

Most of the development in the interior of the district is related to ranching and includes waters, fences, and other types of rangeland improvements. The few ranch houses scattered across the district are not permanent residences and are only occasionally used by ranch hands.

Over 265,600 acres of these public lands within eight areas are so exceptional in their natural values, remoteness, and scenery that they have been designated by congress and are managed by BLM as part of the National Wilderness Preservation System. Remote areas adjacent to the Grand Canyon National Park and Lake Mead and Glen Canyon National Recreation Areas offer quality recreation experiences in backcountry settings.

Four desert bighorn sheep herds thrive in rugged country in and around the wilderness areas. Escarpments and canyons are inhabited by the endangered peregrine falcon. The many vegetative communities provide habitat for mule deer, antelope, wild turkey, desert tortoise, and many other wildlife species.

Some areas have features so sensitive, such as archaeological sites; threatened and endangered plants; and other values, that special management emphasis is required.

Resources with important commercial values are also present. Concentrated deposits of uranium, in geological structures known as breccia pipes, are scattered over much of the area. Large gypsum deposits exist in the Shivwits Resource Area. Public lands are also important to many ranching operations.

SUMMARY

A wide variety of multiple uses occur on the district and public use has increased steadily in recent years. The resources available and the associated uses and industries are important to the public as well as local communities, regional economies, and the nation.

The principal industries on the district are ranching and mineral exploration and development. Livestock grazing has been and continues to be a major use of public lands since the 1880's. Over 135 ranchers graze 23,000 cattle annually on the district.

Uranium exploration and development operations have occurred over the past decade. Eight mines have been developed. Three have been mined out and the sites rehabilitated. Three mines are currently producing ore, though two of them are winding down production. One mine is fully developed and ready for production while another is in the initial development stage. Due to the vertical columnar structure of the breccia pipe, mining occurs underground. Typical surface disturbance for this type of mine is 15 to 20 acres per mine. The estimated cumulative area disturbed by uranium exploration and development to date is 722 acres. Of this total, approximately 369 acres have been reclaimed. Mine operations, including development, mining, and rehabilitation, involves an average period of 8 to 10 years.

Gypsum mining is taking place in two locations on the district. Another gypsum mine is inactive.

THE PLANNING PROCESS

This RMP/EIS is being prepared in accordance with the BLM planning regulations. Decisions herein will update or, in many cases, replace land use planning decisions in the Shivwits and Vermillion Resource Area Management Framework Plans (MFP). These MFPs have guided BLM's public land management programs for the past seven and thirteen years respectively. Substantial changes have occurred within the district since they were prepared.

A variety of planning criteria established the legal parameters and management goals that direct the development of the RMP. The basic criteria used came from FLPMA.

Objectives established as an integral part of the planning process guide proposed management programs and development and evaluation of alternatives.

Prominent districtwide objectives are:

- Manage for multiple use
- Protect unique features and special resource values
- Maintain remote character
- Manage resources in cooperation with adjacent land agencies

Recognizing that some public lands are more sensitive to multiple uses than others because of special qualities, concerns, or conflicts, two areas have been identified to guide management initiatives. They are referred to as areas A and B and defined as follows.

A AREAS:

These are the more typical areas which do not generally require special management. They include most of the district's public lands and a wide variety of resources and values requiring continued multiple use management. Management would remain similar to current practices. Areas and acreages that would be managed under these guidelines vary by alternative but management practices would remain the same.

B AREAS:

These include public lands that have special resource values, sensitivities, or characteristics requiring special management attention. Areas and acreage to be managed under this category vary by alternative but management guidelines would remain the same. Multiple use would continue to be a central management feature.

Thirteen areas with special values are also analyzed herein for designation as special management areas. They include Areas of Critical Environmental Concern (ACECs), Resource Conservation Areas (RCAs) and Special Recreation Management Areas (SRMAs). The number of special management areas and type of designation proposed vary by alternative.

PLANNING ISSUES

The RMP/EIS is issue-driven. The planning effort focuses on resolving major issues associated with management of public lands on the district.

There is high public interest and concern about how public lands and associated resources are and will be managed in the future. Scoping meetings held to obtain public input and followup staff work by the planning team identified six major planning issues for resolution in this RMP/EIS. These issues are the focus of this planning effort and they are addressed and tracked throughout this document. The six issues are listed below and explained in more detail in the "Planning Issues" section of Chapter I.

Issue 1: Land Tenure Adjustments

Issue 2: Recreation Management

Issue 3: Mineral Resource Management

Issue 4: Access to Public Lands

Issue 5: Cultural Resource Management

Issue 6: Areas of Critical Environmental Concern and Other Areas Requiring Special Management

Two issues previously resolved within the district, rangeland management and wilderness designation, merit mention in this summary. Districtwide rangeland management programs were comprehensively addressed in the Vermillion Grazing EIS (1979) and the Shivwits Grazing EIS (1980). Decisions following the Shivwits and Vermillion Grazing EISs have been adopted as management direction for grazing administration and associated rangeland management. Two draft EISs were prepared on wilderness suitability in 1981 and 1982. In 1984, the Arizona Wilderness Act designated over 265,600 acres of BLM-administered lands on the district as wilderness, completing this effort.

MANAGEMENT COMMON TO ALL ALTERNATIVES

Management decisions and guidance common to all alternatives are also provided in the RMP/EIS. They are from existing MFPs, activity plans and the laws, regulations, and policies by which the BLM is directed. Common management direction involves facets of the following resource programs: lands, minerals, rangeland/vegetation, wild burros, special status species, wildlife habitat, riparian habitat, cultural resources, soil, water and air, fire management, hazardous materials, recreation, transportation/access maintenance, forestry/woodland, law enforcement, and environmental management.

ALTERNATIVES CONSIDERED

Four alternative plans were developed by the planning team in cooperation with district management. The alternatives represent different ways of managing public lands and resources within the multiple use concept and other requirements of FLPMA, while addressing the six planning issues and resolving other conflicts. Each alternative represents a complete and feasible plan for managing the public lands over the next fifteen years.

Alternative 1 (No Action)

The no action alternative would continue existing management practices at current levels and intensities using the Shivwits and Vermillion Resource Area MFPs. This was not selected as the preferred alternative because it would not be responsive to the growing management complexities on the district. A number of new issues and land use conflicts have developed with accelerated public use since the MFPs were developed. More focused management attention and special designations are necessary in some areas. Moreover, the updated public involvement, analysis, decisions, and management programs which result through the RMP/EIS process provide a more comprehensive framework for integrated multiple use management and resolution of land use conflicts.

Alternative 2 (Preferred Alternative)

This alternative is BLM's preferred plan. In accordance with FLPMA, a diverse combination of balanced uses would be accommodated and managed, while providing a responsive approach to planning issues, resolution of conflicts, more focused management in areas with special values, and management objectives of adjacent federal lands.

SUMMARY

Multiple uses which now occur and are reflected in the preferred plan's objectives, decisions and management programs include, but are not limited to, diverse kinds of recreation, livestock grazing, mineral exploration and development, wildlife development and utilization, watershed, wild burros, woodland products, designated wilderness, cultural resources, visual resources, riparian, special status species, rights-of-ways, and community expansion needs.

Thirteen special management areas, including ten ACECs, two RCAs and one SRMA are proposed, covering 445,000 acres, along with management prescriptions for each. The special management areas and the special values and acreages involved are listed in Table S-1.

TABLE S-1

**SPECIAL MANAGEMENT AREAS PROPOSED FOR
THE ARIZONA STRIP DISTRICT UNDER ALTERNATIVE 2**

Areas	Resource	Acres
Areas Of Critical Environmental Concern (10)		
Beaver Dam Slope	Desert tortoise	20,800
Virgin River Corridor	Scenic, Riparian	8,100
Little Black Mountain	Cultural Resources	200
Fort Pierce	Endangered cacti, Critical Watershed	900
Marble Canyon	Endangered cacti	10,700
Johnson Spring	Cultural Resources, Endangered cacti	2,400
Lost Spring Mountain	Cultural Resources, Endangered cacti	9,800
Moonshine Ridge	Cultural Resources, Endangered cacti	5,500
Witch Pool	Cultural Resources	260
Nampaweap	Cultural Resources	550
SUBTOTAL		59,210
Resource Conservation Areas (2)		
Parashant	Wildlife, Scenic, Recreation, Grazing, Watershed	51,000
Mt. Trumbull	Wildlife, Scenic, Recreation, Cultural, Ponderosa pine forest, Grazing, Watershed	108,000
SUBTOTAL		159,000
Special Recreation Management Areas (1)		
Paria Plateau	Cultural Resources, Scenic, Recreation, Watershed, proximity to wilderness	227,000
GRAND TOTAL		445,210

Response to Planning Issues

Lands Issue: About 17,170 acres would be available for various public purposes around communities to meet long-term public needs. Active acquisition and exchange programs are proposed focused on 147,600 acres of state land. The City of Page, Arizona, anticipates the need for expanded airport facilities within the next decade. BLM would continue to work with city and county officials, the FAA, and other agencies in considering and evaluating possible sites to meet future community needs. (Ferry Swale, identified as a possible airport site, is not included in this alternative because of potentially significant adverse impacts associated with wilderness, rights-of-way, safety and other management considerations.)

Recreation Issue: Diverse kinds of dispersed recreation opportunities would be provided over most of the district. Management on 613,000 acres, mainly remote areas, would focus on preserving natural backcountry characteristics and associated recreation values.

Minerals Issue: Most of the district would continue to be open to mineral activities. Minerals activities would be subject to special protective stipulations to minimize adverse impacts on 613,000 acres, mainly remote areas with unique resource values.

Access Issue: OHV use and road management programs would be as follows:

OHVs: All of the district would receive some form of OHV designation. In general, OHV use would become more regulated. OHV use off of existing roads and trails would be prohibited except in designated open areas.

Road Management: No new permanent roads would be allowed in areas where special or remote values are to be protected. Roads not needed for resource management or which contribute to resource damage would be closed.

Cultural Resources Issue: Six ACECs would be established to strengthen protection of cultural resources. Cultural properties in other areas would be carefully managed under current practices.

Special Designations Issue: Special designations are proposed on 13 areas (Table S-1) to protect sensitive plant and animal species, cultural resources, scenic, and riparian values. The designations would provide focused management to protect these sensitive resources.



SUMMARY

ALTERNATIVE 3

Alternative 3 presents a viable alternative for multiple use management of public lands with greater emphasis on environmental protection, more restrictive prescriptions for special management areas, and policies favoring a variety of recreation uses. Multiple uses which would be managed for under this alternative are the same as Alternative 2.

This alternative would enlarge the area administered under area B guidelines in the Grand Wash Cliffs, Parashant, and Kanab Plateau areas. One focus of management would be protecting the natural

backcountry setting and remoteness. Opportunities for quality recreation experiences in remote backcountry settings are recognized as an important feature of these areas. Managing for a variety of recreation experience opportunities is a key multiple-use objective.

Fourteen special management areas are proposed, including 11 ACECs and three SRMAs, encompassing 452,800 acres. Special management areas and the special values and acreages involved are listed in Table S-2. The Mt. Trumbull and Parashant areas would be managed as SRMAs in comparison to Alternative 2 which would designate them as RCAs.

TABLE S-2

**SPECIAL MANAGEMENT AREAS PROPOSED FOR
THE ARIZONA STRIP DISTRICT UNDER ALTERNATIVE 3**

Areas	Resource	Acres
Areas Of Critical Environmental Concern (11)		
Beaver Dam Slope	Desert tortoise	20,800
Virgin River Corridor	Scenic, Riparian, Endangered fish	8,100
Little Black Mountain	Cultural Resources	200
Fort Pierce	Endangered cacti, Critical Watershed	3,600
Marble Canyon	Endangered cacti	15,500
Johnson Spring	Cultural Resources, Endangered cacti	2,400
Lost Spring Mountain	Cultural Resources, Endangered cacti	9,900
Moonshine Ridge	Cultural Resources, Endangered cacti	5,500
Witch Pool	Cultural Resources	260
Nampaweap	Cultural Resources	540
Paria Plateau	Cultural Resources, Scenic, Recreation, proximity to wilderness	186,000
SUBTOTAL		252,800
Special Recreation Management Areas (3)		
Paria Plateau	Cultural Resources, Scenic, Recreation, proximity to wilderness	227,000
Mt. Trumbull	Wildlife, Scenic, Recreation, Ponderosa forest, Cultural Resources, Grazing	108,000
Parashant	Wildlife, Scenic, Recreation, Grazing	51,000
SUBTOTAL		386,000
GRAND TOTAL*		452,800

*Overlapping acreages occur on the Paria Plateau, which is both an ACEC and a SRMA. This grand total is adjusted to correct for that overlap.

Response to Planning Issues

Lands Issue: 15,010 acres would be available for exchange and various public purposes around communities. All remaining lands would be retained in public ownership and an active acquisition program is proposed, focused on 160,000 acres of state land and areas with high resource values. New airports would be limited to area A.

Recreation Issue: The Mt. Trumbull, Parashant, and Paria Plateau areas would be designated and managed as SRMAs. Management on 895,000 acres of primarily remote areas would focus on preserving the natural backcountry characteristics and associated recreation values.

Minerals Issue: Most of the district would be open to mineral activities, but all ACECs would be withdrawn from mineral location and limited to no surface occupancy for leasing.

Access Issue: OHV use and road management programs would be administered as follows:

OHVs: All of the district would receive some form of OHV designation. There would be no areas established for unrestricted OHV use. Much of the district would be either limited to designated roads and trails or closed to OHV use.

Road Management: No new permanent roads would be authorized in areas where special or remote values are to be protected. Roads not needed for resource management or which contribute to resource damage would be closed.

Cultural Resources Issue: Seven ACECs would be established to strengthen protection of cultural resources, including one on the Paria Plateau encompassing 186,000 acres. Moreover, the ACEC prescriptions would have more restrictive management guidelines than for other alternatives.

Special Designations Issue: Special designations for 14 areas are proposed, encompassing 452,800 acres (Table S-2). Certain areas containing critical watershed values would be added to the list of sensitive resources to be protected under this alternative.

ALTERNATIVE 4

The same multiple uses explained in Alternative 2 and 3 would be managed on a balanced, integrated basis but with greater emphasis on the needs of consumptive users and on use and development of resources. This alternative would have the smallest area administered under area B guidelines when compared to the other alternatives.

An ACEC would be established (77,000 acres) on the Paria Plateau to strengthen protection of cultural resources. No RCAs or SRMAs would be proposed.

Among the alternatives, this one comes closest to representing the preferences and concerns of local resource consumptive users and individuals and companies involved in the primary industries on the district. It is an alternative for multiple use management emphasizing policies and programs favoring use and development of resources over most of the district with fewer restrictions and special management areas.

Response to Planning Issues

Lands Issue: 28,900 acres would be available for exchange and various public purposes around communities. Except for an area of public land that would be made available for an airport in the Ferry Swale area near Page, Arizona, all remaining lands would be retained in public ownership and an active acquisition program proposed. 129,000 acres of state land would also be acquired. New airports would be limited to area A.

Recreation Issue: With the exception of wilderness areas, the district would be managed for extensive recreation use. Four open OHV areas would be established near communities to accommodate this growing recreational use.

Minerals Issue: Only those areas with unique resource values which are particularly susceptible to adverse impacts would be considered for special protective stipulations.

Access Issue: OHV use and road management programs would be administered as follows:

OHVs: All of the district would receive some form of OHV designation. The majority of the district would be classified as limited to existing roads and trails. Unrestricted OHV use areas would be established.

SUMMARY

Road Management: Areas where roads might be closed and access limited would be restricted to a few mountain and canyon areas and portions of the Paria Plateau and Grand Wash Cliffs.

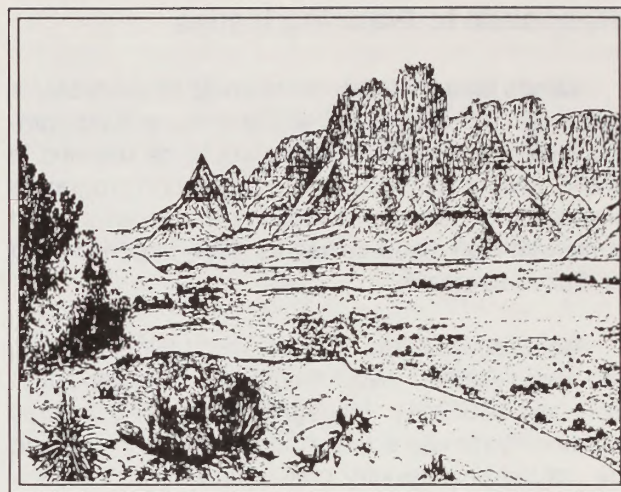
Cultural Resources Issue: To provide special management and protection of cultural resources, one ACEC would be established on the Paria Plateau.

Special Designation Issue: One ACEC is proposed, encompassing 77,000 acres on the Paria Plateau.

MAJOR COMPARISONS BETWEEN ALTERNATIVES

1. Special Designations Issue:

As can be seen in Table S-3, Alternatives 2, 3 and 4 contain special designations. The number and acreage of each type of special designation varies by alternative. In Alternative 2 a wide range in the type of designation is proposed. Alternative 2 special designations favor recreational use while the Alternative 4 special designations are designed to protect cultural resources.



2. Lands Issue:

Certain lands have been identified as being suitable for exchange, lease and sale in each alternative (Table S-4). The least amount is identified in Alternative 1, while the greatest amount is identified in Alternative 3. An airport site at Ferry Swale would be accommodated in Alternative 4. Land acquisitions would be pursued in all alternatives.

TABLE S-3

COMPARISON OF PROPOSED SPECIAL DESIGNATION ON THE ARIZONA STRIP BY ALTERNATIVE

Designation	Alternatives			
	1	2	3	4
ACECs (acres)	- -	10 (59,210)	11 (252,800)	1 (77,000)
RCAs (acres)	- -	2 (159,000)	- -	- -
SRMAs (acres)	- -	1 (227,000)	3 (386,000)	- --
Totals (acres)	- -	13 (452,800)	14 (452,800)*	1 (77,000)
% of district	-	15.9	16.1	2.7

*Note: This figure has been adjusted to compensate for overlapping acreage which occurs because the Paria Plateau is both an ACEC and a SRMA.

Table S-3 does not include wilderness designations

TABLE S-4

**COMPARISON OF EXCHANGES, RECREATION & PUBLIC PURPOSES, ACQUISITIONS, AND AIRPORTS
ON THE ARIZONA STRIP BY ALTERNATIVE**

Designation	Alternatives (Acres)			
	1	2	3	4
Exchanges, R&PPs	2,800	17,170	15,010	28,900
State Land Acquisition	129,000	147,600	160,000	129,000
Private Land Acquisition	*	9,700	9,000	*
Airports	Process requests as received.	Limit new airports to area A. Make lands available to expand Colorado City airport. (Ferry Swale, identified as a possible airport site is not included in this alternative because of potentially significant adverse impacts associated with wilderness, rights-of-way, safety and other management considerations.	Limit new airports to area A. Close Poverty airport.	Make land available to expand Colorado City airport. Designate up to 1,900 acres of land in Ferry Swale area for an airport.

*Acquire private inholdings where shown to be in public interest.

3. Recreation Issue:

The most comprehensive recreation- benefitting proposals are in Alternative 3 which would designate and manage the Mt. Trumbull, Parashant and Paria Plateaus as SRMAs and would manage 895,000 acres, the largest area of any of the alternatives, to protect remoteness and backcountry settings. Alternative 4 would manage for extensive recreation use over the district but would not establish special management areas for recreation or RCAs. Alternative 2 would designate the Paria Plateau an SRMA and manage 613,000 acres, mostly remote areas, with a focus on

preserving the natural backcountry characteristics and associated recreation values. Recreation is also recognized as a priority use and management feature for the proposed Mt. Trumbull and Parashant RCAs in Alternative 2.

4. Minerals Issue:

The most restrictive guidelines regarding minerals would occur under Alternative 3 which would withdraw proposed ACECs, 11 of them, from mineral location and require special stipulations on 895,000 acres in area B, the largest area of any alternative, to

SUMMARY

minimize adverse effects of minerals operations. Alternative 4 is the least restrictive. Alternative 2 would not propose any new withdrawals but would require special stipulations on minerals operations on 613,000 acres recognized as having special natural values in remote settings.

5. Access Issue:

Alternative 4 would have the least restrictive guidelines regarding access. Alternative 3 would be the most restrictive due to the larger area involved calling for no new permanent roads and possible closure of existing roads. Table S-5 shows proposed OHV designations by alternative.

TABLE S-5
COMPARISON OF OHV MANAGEMENT GUIDELINES BY ALTERNATIVE*

	Alternative (Acres)			
	1	2*	3*	4*
Limited to existing roads	1,238,500	1,811,900	1,897,000	2,374,500
% of district	44	71	74	93
Limited to designated roads	20,400	690,400	558,800	169,000
% of district	1	27	22	6
Closed to OHV use	270,500	45,100	92,600	24,500
% of district	10	1	4	1
Open to unrestricted OHV use	0	1,400	0	4,500
% of district	0	1	0	1
Acres not designated	1,284,600	0	0	0
% of district	45	0	0	0

*The acreage and percentages do not include the wilderness areas.

6. Cultural Resources Issue:

Cultural resources would be managed for their information potential and for their conservation and

public values. Significant cultural areas are proposed for ACEC designation as shown in Table S-6.

TABLE S-6
CULTURAL RESOURCE ACEC COMPARISON BY ALTERNATIVE

	Alternatives (Acres)			
	1	2	3	4
Little Black Mountain	-	200	200	-
Johnson Spring	-	2,400	2,400	-
Lost Spring Mountain	-	9,800	9,900	-
Moonshine Ridge	-	5,500	5,500	-
Witch Pool	-	260	260	-
Nampaweap	-	550	550	-
Paria Plateau	-	-	186,000	77,000
TOTAL ACRES	-	18,710	204,810	77,000

ENVIRONMENTAL IMPACTS

The environmental impacts of the four alternatives have been comprehensively analyzed. They are described in chapter IV and summarized in accompanying tables in this summary section. The impacts depict the projected change that would occur in the environment by the year 2005 if the alternative plan being analyzed was implemented.

The cumulative impacts section addresses the degree, and extent of the cumulative impacts on the physical, biological, remoteness, and socio-economic components of the environment. Cumulative impacts

include the impact on the environment which results from the incremental changes from the various actions when added to other past, present and reasonably foreseeable changes. Cumulative impacts can also result from individually minor, but collectively significant actions taking place over a period of time.

Table S-7 summarizes cumulative surface disturbance changes from 1976-1989 that represent the baseline condition existing within the district and projects reasonably foreseeable impacts (1990-2005) for each alternative. Figure S-1 graphically displays surface acres disturbed in the past and projected for the future for each alternative and by program.

FIGURE S - 1
SURFACE ACRES DISTURBED

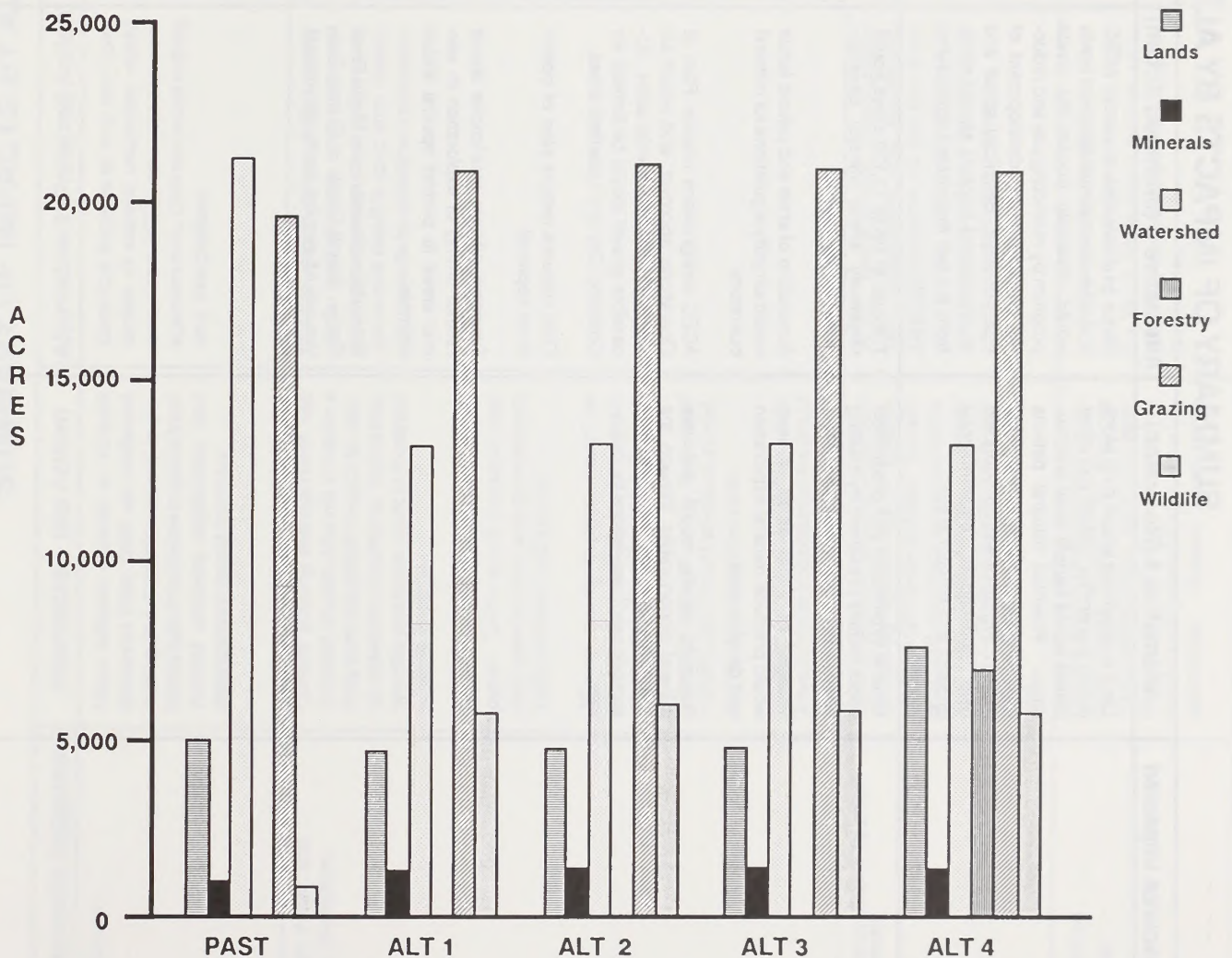


TABLE S - 7
SUMMARY OF IMPACTS BY ALTERNATIVE

Resource Impacted	Alternative 1 (No Action)	Alternative 2 (Preferred Action)	Alternative 3	Alternative 4
Land	Land acquisitions would help block public ownership. R&PP and other leases would benefit local communities. Potential mineral patents would reduce the federal ownership pattern. Rights-of-way corridors will help consolidate environmental impacts into smaller areas.	Same as Alternative 1, except ACEC and other special management areas would adversely impact the lands program by restricting use and reducing alternatives for development of rights-of-ways. Beneficial social and environmental impacts should occur from the two designated right-of-way corridors.	Same as Alternative 2, except additional acquisitions and disposals would benefit public land administration and local communities respectively.	Same as Alternative 1, except for the additional adverse impacts from development of the Ferry Swale Airport and the restrictions on lands actions from B Areas.
Minerals	<p>Mineral exploration and production opportunities preserved by existing open to entry and leasing status.</p> <p>Transfer of 2,800 acres of land would preclude mineral exploration and development.</p> <p>Acquiring lands would enhance mineral opportunities through the simplicity of single administration and one set of regulations for operators.</p>	<p>Transfer of up to 17,170 acres could negatively affect mineral development on these lands.</p> <p>Acquisition of state and private lands would simplify regulations for mineral operators.</p> <p>ACEC designations require Plan of Operations approval, and would be closed to mineral material sales. Accessible gravel would be limited for Colorado City and Littlefield areas.</p> <p>OHV closures require plan of operations approval.</p> <p>Seasonal oil/gas restrictions would restrict timing of exploration in several areas to protect special status animals.</p> <p>No surface occupancy in Virgin River Gorge, Kanab Creek or Grama Canyon would require costly directional drilling.</p>	<p>Transfer of up to 15,010 acres could negatively effect mineral development on these lands.</p> <p>Acquisition of state or private land would simplify regulations for operators.</p> <p>ACEC designations would segregate land from new mining claim location and require plan of operation submissions for existing claims.</p> <p>Closure of additional lands to OHV requires advance plan approval.</p> <p>ACEC designation would preclude surface occupancy for oil and gas exploration. Directional drilling could be used with additional time and expense involved. High negative impact for minerals involved.</p> <p>No surface occupancy restrictions in Kanab Creek and Grama Canyon has low potential impact on oil/gas development.</p> <p>Surface use restrictions on slopes would require costly directional drilling.</p> <p>Mineral material disposals prohibited in ACEC requiring users to locate other sources.</p>	<p>Transfer of up to 28,900 acres of public land could negatively effect mineral development on these lands.</p> <p>Acquisition of state lands provide positive benefits in administration and operation under one set of regulations.</p> <p>Withdrawal of 1,900 acres and use for Ferry Swale area airport would largely preclude future mineral exploration or production in that area.</p> <p>Revocation of Vermillion Cliffs Natural Area would open lands for mineral exploration and possible use of mineral materials.</p> <p>Designation of 77,000 acres of ACEC on Paria Plateau would require plan of operations approval.</p>

TABLE S - 7
SUMMARY OF IMPACTS BY ALTERNATIVE

Resource Impacted	Alternative 1 (No Action)	Alternative 2 (Preferred Action)	Alternative 3	Alternative 4
Cultural	Minor adverse impacts on cultural resources from OHV use fuelwood cutting and recreation as well as potential indirect adverse impacts from mineral resource exploration and development would continue.	Beneficial impacts to long term protection of cultural properties would occur from ACEC, other special management area, OHV and wood cutting area designations.	Same as Alternative 2, except increased long term beneficial impacts would occur from locatable mineral segregations and oil and gas lease stipulations as a result of the management prescriptions in the ACECs and special management units.	Same as Alternative 1, except Paria Plateau ACEC would provide beneficial impacts.
Soil, Water, and Air Resources	<p>Current grazing management has reduced erosion and will produce a long term beneficial impact to overall watershed conditions. Some site-specific problems result in localized adverse impacts.</p> <p>Riparian areas are expected to improve. OHVs would increase wind and water erosion and downstream sedimentation and salinity.</p> <p>Mineral activity impacts would be moderately negative, but temporary on soil and vegetation in small areas.</p> <p>Adverse impacts from past road construction would continue in environmentally sensitive areas.</p> <p>Woodland and forest activities could have adverse impacts over the life of the plans.</p>	<p>Special designations, OHV restrictions, road closures and increased emphasis on watershed problem areas would result in long term beneficial impacts to watershed resources.</p>	<p>Closure of OHVs in some ACEC areas, closure of ACECs to mineral entry, no surface occupancy lease stipulations for leasable minerals in ACECs and sensitive visual resource areas could result in long term beneficial impacts to watershed resources.</p>	<p>Impacts are similar to Alternative 1, with the following exceptions: (1) potential positive impacts from the Paria Plateau ACEC designation and seasonal restrictions attached to oil and gas leases for special status species; (2) potential adverse impacts from erosion and pollution associated with the Page airport.</p>
Special Status Species	Land acquisition targeted at parcels containing special status species could benefit these species. Current laws and regulations are adequate to protect these species. Uncontrolled OHV use has potential to adversely impact special status species.	ACEC management prescriptions, land acquisitions and exchanges, OHV designations, oil and gas lease stipulations and riparian management strategies all have beneficial impacts to special status species.	Same as Alternative 2, except ACEC management criteria and OHV designations are more restrictive providing higher levels of protection.	The impacts in this alternative are similar to those described in Alternative 1. ACECs and OHV designations do not provide the protection as described in Alternatives 2 and 3.
Riparian	Current grazing management practices would continue to improve most riparian areas. Areas with year-long grazing would be adversely impacted until grazing systems are implemented. Riparian areas along	Impacts would be the same as Alternative 1, except riparian areas along the Virgin River would receive additional protection from competing resource uses.	Impacts are the same as Alternative 2, except riparian areas in the Virgin River ACEC would be closed to most other competing uses. Also, the Beaver Dam Wash area would be managed as a riparian demonstration area that would optimize	Same as Alternative 1, except only the Virgin River Gorge would be protected from other competing uses.

TABLE S - 7
SUMMARY OF IMPACTS BY ALTERNATIVE

Resource Impacted	Alternative 1 (No Action)	Alternative 2 (Preferred Action)	Alternative 3	Alternative 4
Riparian (cont.)	the Virgin River between Beaver Dam and Mesquite would continue to decline due to OHV and recreation use.		management and protection.	
Forest/Woodlands	<p>Present management of primarily fire control would eventually result in old growth timber stands with a lot of fuel build up.</p> <p>Woodlands would be positively impacted by harvest of fuelwood/juniper (PJ) stands.</p>	<p>Forests managed would benefit other resource values. Old growth would be retained, but selective thinning, disease control and prescribed burns would be allowed to support a healthy multiple-use forest.</p> <p>Intensely managing the fuelwood/post harvest areas would have beneficial impact by opening PJ stands to new growth. Closure of ACECs to fuelwood/post harvesting could adversely impact permittees used to harvesting those areas.</p>	<p>Impacts are the same as Alternative 2.</p>	<p>Harvest of some old growth ponderosa pine on the Uinkaret and Parashant forests would produce a younger, healthier, and more productive forest.</p> <p>Other impacts are the same as Alternative 1.</p>
Grazing Management	<p>Transfer of land would result in loss of grazing area and forage.</p> <p>Land acquisition would simplify administration and increase fee revenues.</p>	<p>Land disposal would reduce acreage available for livestock grazing.</p> <p>Acquisition of state and private lands would improve administrative efficiency, reduce permittee contacts, and increase federal fee receipts.</p> <p>ACEC designations and management prescriptions would constrain range-land management options and range improvements.</p> <p>Rangeland productivity would be enhanced, but potential for water runoff to reservoirs reduced by implementing more intensive watershed management.</p>	<p>Transfer of public lands would have long term, but moderate, negative impacts in loss of forage.</p> <p>Acquiring state and private lands would have essentially the same benefits as described for Alternative 2.</p> <p>Management prescriptions for riparian areas may restrict or exclude livestock in some instances.</p> <p>Fort Pierce ACEC management may require short term livestock restrictions to meet objectives. Overall vegetative cover improvement could provide more forage for the long term. Management of desert tortoise lands including ACEC could restrict grazing and range improvements.</p>	<p>Land transfer impacts same as Alternative 2.</p> <p>Land acquisition impacts same as Alternative 2.</p> <p>Ferry Swale Airport site largely eliminates 1,816 AUMs in Ferry Swale and Blue Pool Allotments.</p> <p>ACEC impacts similar to those described for Alternative 2, except fewer and smaller ACEC proposals would substantially reduce impacts.</p> <p>OHV designations less restrictive than Alternatives 2 or 3.</p> <p>Long term forage production benefits from watershed management.</p>

TABLE S - 7
SUMMARY OF IMPACTS BY ALTERNATIVE

Resource Impacted	Alternative 1 (No Action)	Alternative 2 (Preferred Action)	Alternative 3	Alternative 4
Wildlife	<p>Wildlife could continue to be adversely impacted by OHV use, particularly in the Vermillion Resource Area.</p> <p>Mineral resource exploration and development could have limited short term negative impacts to sensitive wildlife species.</p> <p>Adequate forage would be allocated through allotment management plans.</p>	<p>Land ownership adjustments would be beneficial to wildlife by acquiring important habitat. The two RCAs would help maintain habitat by restricting OHVs and managing ponderosa pine to enhance wildlife values. Stipulations attached to mineral leases would provide protection to sensitive species during certain critical times.</p>	<p>Allowing natural processes to determine wildlife populations could limit antelope and bighorn sheep where long term viable populations have not been established. Woodland and ponderosa pine management would enhance wildlife values.</p> <p>The management prescriptions for the Beaver Dam ACEC would protect desert tortoise from most impacts associated with competing land uses. Other sensitive wildlife species would be protected from impacts associated with leasable mineral resources as outlined in Alternative 2.</p> <p>The SRMA designations for Mt. Trumbull and Parashant areas could increase visitor use and have a negative impact on wildlife.</p>	<p>Managing Mt. Trumbull and Parashant areas for timber harvest could have a negative impact on wild turkeys, raptors and Kaibab squirrels. Timber harvest, however, could be beneficial to mule deer.</p>
Recreation Resources	<p>Land ownership adjustments would have an overall net beneficial impact. Fuelwood harvesting could adversely affect semi-primitive recreation opportunities, but be beneficial to those who enjoy these activities. Mineral resource exploration and development activities could result in temporary, minor adverse impacts in some small areas. Character of remote areas could change if new access was built. Future visitor experience opportunities could be moderately impacted by present management strategy. Beneficial impacts would result from riparian area management.</p> <p>OHV use could continue to be unregulated over most of the district.</p>	<p>Land ownership adjustments would have an overall net beneficial impact. Communication sites on remote, high peaks would have a moderate adverse impact. Special designations for cultural, riparian, special status species, recreation values, and wild and scenic rivers would have long term beneficial impacts to recreation resources and users.</p> <p>Management actions for the fuelwood and mineral resource exploration and development programs would enhance abilities to maintain natural settings which benefit recreation users.</p> <p>Wildlife habitat management could increase hunting and wildlife viewing opportunities.</p> <p>Management of 613,000 acres under area B guidelines would help maintain remoteness.</p>	<p>Impacts would be similar to or the same as Alternative 2, except as follows:</p> <p>Restricting surface occupancy and uses in areas within high scenic values would provide protection for those seeking primitive, nonmotorized backcountry experiences.</p> <p>The riparian demonstration area at the confluence of the Virgin River and Beaver Dam Wash would preclude present recreation uses.</p> <p>OHV users would be more restricted than Alternative 2, with enhanced opportunities for those seeking a more primitive, nonmotorized experience. Area B would be larger, providing greater protection for scenic resources and natural settings.</p>	<p>Impacts are similar or the same as Alternative 1, except as follows:</p> <p>The airport in the Ferry Swale area would create long term adverse impacts to recreation resources.</p> <p>Recreation management would be more focused on the Paria Plateau through ACEC designation and management under area B guidelines which would shift management toward providing recreation opportunities that typically take place in more primitive or nonmotorized settings. Fewer acres would be under area B guidelines. Leasable mineral operations would be subject to seasonal lease restrictions for the protection of desert tortoise and peregrine falcon and no surface occupancy in the Virgin River Gorge. OHV would be less restricted than Alternatives 3 and 4, with 4,500 acres designated open around population centers.</p>

TABLE S - 7
SUMMARY OF IMPACTS BY ALTERNATIVE

Resource Impacted	Alternative 1 (No Action)	Alternative 2 (Preferred Action)	Alternative 3	Alternative 4
Recreation Resources (cont.)		<p>Ponderosa pine forest management actions would create short term adverse impacts and long term positive impacts to recreation use.</p> <p>OHV use would be adversely impacted by closures and limitation to designated roads and trails in 735,500 acres. More restrictive management of OHV would result in enhanced recreational opportunities for most users over the majority of the district. 1,400 acres would be designated as open to accommodate that recreational use.</p>		Harvest of ponderosa pine in the Mt. Trumbull and Parashant areas could reduce natural values and indirectly impact the Mt. Trumbull and Mt. Logan Wilderness Areas.
Visual Resources	<p>Overall, land ownership adjustments would have a net beneficial impact.</p> <p>Mineral exploration and development could cause short term adverse impacts in a localized area.</p> <p>OHV use could add to the deterioration of visual quality.</p> <p>Improvement projects for wildlife, livestock grazing, and watershed could impact visual resources depending on location, size, etc.</p>	<p>Impacts are similar or the same as Alternative 1, except as follows:</p> <p>The Virgin River ACEC would have long term beneficial impacts by ensuring that existing scenic quality be maintained. High quality scenic values would be protected with no surface occupancy lease stipulations. Special stipulations on all construction would be in area B to protect the unique resource values and maintain the long term remoteness.</p> <p>Adverse visual resource impacts from the Lime Kiln/Rosy Canyon rights-of-way corridor could be moderate to high depending on location.</p>	<p>Impacts are similar or the same as Alternative 2, except as follows:</p> <p>Area B guidelines would provide protection for scenic and visual resources over a larger area than Alternative 2.</p>	<p>Impacts are similar or the same as Alternative 2, except as follows:</p> <p>Construction of the airport in Ferry Swale would cause high adverse impacts to visual resources.</p> <p>Area B guidelines would provide protection for scenic and visual resources over a smaller area than Alternative 2.</p>
Transportation/Access	<p>Impacts from new or upgraded access from mineral exploration and development over the short term are adverse or beneficial depending on the management objectives of a given area. Over the long term, impacts are insignificant due to rehabilitation requirements.</p> <p>Most of the district would remain undesignated for OHV use.</p>	<p>Cross country access would be more restricted than Alternative 1. Area B guidelines (road closures and no new roads) would impact access over the long term and may be beneficial or adverse depending on the resource use involved.</p>	<p>The management actions and impacts are the same as Alternative 2, except that the area B is larger and many of the ACECs would be closed to OHV use. Access is more restrictive than Alternative 2.</p>	<p>The management actions and impacts are similar to Alternative 2. Area B is smaller with less impacts to access. The only ACEC would be on Paria Plateau with OHVs restricted to existing roads and trails. Harvest on ponderosa pine on the Unkaret Mountains and Parashant would require road improvement and would benefit public access.</p>

TABLE S - 7
SUMMARY OF IMPACTS BY ALTERNATIVE

Resource Impacted	Alternative 1 (No Action)	Alternative 2 (Preferred Action)	Alternative 3	Alternative 4
Socio-Economic	<p>Land disposals increase tax base.</p> <p>Continued social and economic benefits of mineral exploration and potential production from all lands.</p>	<p>Low cost transfer of land for public purposes to local governments.</p> <p>Land acquisitions would enhance resource values.</p> <p>Greater access costs and possibly less communication coverage from Seegmiller Mountain site.</p> <p>Major R/W corridor would save time and expense for applicants.</p> <p>ACEC prescriptions limit or preclude realty actions and may cause economic or social impacts.</p> <p>Woodland product designations benefit personal users, require greater travel for commercial harvesters.</p> <p>Potential economic benefits of ponderosa pine harvest foregone.</p> <p>Greater difficulty and expense in salable and locatable mineral uses in area B.</p> <p>Limits on OHV uses by designations.</p> <p>Greater preservation of current semi-primitive motorized and semi-primitive nonmotorized recreational opportunities.</p>	<p>Management actions and impacts are the same as Alternative 2 except as follows:</p> <p>More land transfers benefit tax base, private economic land use, but diminish public land acreages.</p> <p>Greater communication site access costs, possibly less coverage.</p> <p>SRMA and ACEC management would restrict woodland harvest, OHV opportunities, mineral exploration and production, and their social and economic benefits.</p> <p>Special status species management could restrict or preclude land uses and land transfers.</p>	<p>Management actions and impacts are the same as Alternative 2 except as follows:</p> <p>Lands for Ferry Swale Airport site would provide positive social and economic benefits.</p> <p>Potential economic benefits would accrue from timber harvest.</p>

TABLE S - 7
SUMMARY OF IMPACTS BY ALTERNATIVE

Resource Impacted	Cumulative changes in the existing environment apply to all alternatives.
	CUMULATIVE IMPACTS:
- Cumulative Change in the Existing Environment (1976-1989)	
<p>**Physical Component</p> <p>A total of 67,860 acres were physically disturbed. Of this, 61,750 acres (91 percent) were related to vegetation type conversions and harvest of woodland products of which 99 percent are considered temporary changes and would be seeded and rehabilitated to reduce erosion and sedimentation, enhance vegetative cover, improve rangeland conditions, wildlife habitat, and livestock forage. Management of the lands and minerals programs has resulted in an estimated 5,900 acres of surface change since 1976. Approximately 4,800 acres are considered long-term and permanent changes resulting from lands actions (land developments and agriculture following transfer to private ownership, and rights-of-way and leases). Locatable mineral development activities have disturbed about 750 acres of the surface since 1976 resulting in temporary change. Five miles of new road are to be closed and rehabilitated and 38 miles of upgraded roads are to be rehabilitated to near original road conditions upon termination of the specific need. Leasable and salable minerals accounts for another 350 acres of surface disturbance since 1976.</p> <p>**Biological Component</p> <p>The cumulative change of 14 years of management under the MFPs has resulted in both positive and negative change to animals and plants. As the surface is disturbed, biological components of the environment are changed also.</p> <p>The end result of vegetation type conversions has been an increase in biological diversity on-site by creating change in a stagnant or undesirable plant community. Short term changes to wildlife species occurred throughout the disturbance phase. Mobile wildlife were temporarily displaced, but quickly returned to the changed and improved habitat. The reseeded areas create more diverse vegetative communities than previously existed and can generally be utilized by a wider variety of species than were present prior to treatment.</p> <p>The harvest of woodland products temporarily disturbs vegetation, soil and displaces wildlife. When woodland activities were concentrated in specific areas, the changes are similar to land treatments in that overstory is removed, allowing for a more productive understory. Some negative changes to wildlife species have occurred in areas where small roads are created to facilitate harvesting of woodland products.</p> <p>The rangeland grazing program on the district is guided by the Shivwits and Vermillion Grazing Management Environmental Impact Statements (EIS) and subsequent monitoring and evaluation activities. The monitoring data shows that 90 percent of the district is in upward and static trend. Rangeland conditions have improved which contributes to increased biological diversity.</p> <p>Management of riparian areas has been intensified since completion of grazing EISs and AMP and HMP implementation. Ten of the priority riparian areas have been fenced to exclude livestock grazing, four have had adjustments in grazing use and numbers, three are not allocated to grazing due to topography and location, and the remaining area is now included in a AMP.</p> <p>Management of special status species has improved habitat. BLM has participated in development of recovery plans for the endangered roundfin minnow, peregrine falcon, and Brady and Siler pincushion cactus. Inventory and monitoring efforts have been increased on these species as well as candidate species for listing such as desert tortoise and Fick and bristly plains cactus.</p> <p>Six wildlife habitat management plans (HMPs) have been developed and are in various stages of implementation. Habitat improvements including land treatments, water developments and modification of fences and waterlots have been implemented to improve conditions and improve diversity of wildlife on the district. In cooperation with the Arizona Game and Fish Department, several species of wildlife have been transplanted to new and former ranges. These include pronghorn antelope, desert bighorn sheep, Kaibab squirrel, Merriam's turkey and most recently, mule deer. The combination of land treatments, riparian management, special status species recovery programs and implementation of AMPs and HMPs has contributed significantly to the biological diversity of both plants and animals on the district.</p>	

TABLE S - 7
SUMMARY OF IMPACTS BY ALTERNATIVE

Resource Impacted	Cumulative changes in the existing environment apply to all alternatives.
**Biological Component (cont.)	<p>Locatable, leasable and salable minerals account for temporary changes to plants and animals on 1,100 acres (2 percent of the total surface disturbance since 1976). Wildlife are displaced near exploration and development sites generally for the duration of operations. Some species such as song bird, bighorn sheep or raptor may acclimate to ongoing disturbances with little consequence other than temporary loss of habitat.</p> <p>Changes which cause a decrease in biological diversity would be related to lands program actions (land developments and agriculture following transfer to private ownership, and rights-of-way and leases) or permanent developments which eliminate vegetation, wildlife or their interactions.</p>
**Remoteness Component	<p>Remoteness is defined as "recreation experience opportunities in backcountry, natural-appearing settings." Backcountry areas having different combinations of these three settings generally fall into the four, less urban classes described in Table III-21: primitive, semi-primitive nonmotorized, semi-primitive motorized, and roaded natural.</p> <p>Management of the watershed, grazing, wildlife and woodland products programs has brought about the greatest change to recreation experience opportunities. Obvious change to physical settings brought about by land treatments, facility development, and associated roads has generally shifted recreation classes from the primitive end of the recreation opportunity spectrum toward the urban end.</p> <p>Mineral exploration and development have changed physical settings with new and upgraded roads and development sites. These activities are considered short-term changes due to mitigation, which includes almost total rehabilitation of access roads, mine yards, and powerlines. The greatest change associated with mineral activities appears to be from new and upgraded roads on the social settings. As roads are either built or upgraded to improve hauling access, access for the general public is also improved. This encourages the public to go into areas they previously avoided due to poor road conditions. With greater numbers of visitors in an area comes a change to the social setting toward the urban end of the spectrum.</p> <p>As growth and associated development has occurred in the Littlefield-Beaver Dam area and the Colorado City-Cane Beds area there has been a change to recreation settings on nearby public lands. Use authorizations and land ownership adjustments have either increased the number of growth-related developments on public lands or transferred ownership to private or state interests. In either case, recreation settings have moved toward the urban end of the spectrum in these areas.</p> <p>In 1984 the designation of eight wilderness areas (265,600 acres or 9.2 percent of lands administered by BLM on the Arizona Strip) contributed significantly to the preservation of remoteness and semi-primitive and primitive recreation opportunities on the district.</p>
**Socio-Economic Component	<p><u>Population:</u> BLM actions which have encouraged and accommodated population growth on the district include the granting of rights-of-way, issuance of leases, processing land exchange applications and patents, and authorizing the use of mineral materials. These types of authorizations facilitate population changes in the general vicinity of the district, but do not directly change populations.</p> <p><u>Income:</u> Income within the Arizona Strip region is derived primarily from government, trade, and services. Together, these types of employment provide approximately 75 percent of the jobs. The remaining 25 percent is composed of jobs in the manufacturing, construction, mining, transportation/public utilities, and fire suppression fields. Recent BLM land use management actions under MFP direction have not significantly changed the traditional types of jobs available in the area or the associated per capita income.</p> <p><u>Social Perceptions:</u> Since the MFPs were developed in the mid-1970s, social perceptions concerning the district and resource use and development have intensified. One of the factors leading to the increase in intensity is the development of resources on the district, specifically uranium mineral resources. Various groups and individuals are opposed to resource development on the public lands. The population which resides within or adjacent to the district, believes that economic development is needed. This development, it is perceived, would tend to stabilize employment and increase income. To this end, there appears to be widespread local support for increased activities related to manufacturing, construction, and mining.</p>

TABLE S - 7
SUMMARY OF IMPACTS BY ALTERNATIVE

Resource Impacted	Alternative 1 (No Action)	Alternative 2 (Preferred Action)	Alternative 3	Alternative 4
REASONABLE FORESEEABLE IMPACTS (1990-2005) BY ALTERNATIVE				
**Physical Component	<p>Overall, a total of 64,750 acres could undergo some degree of surface impact. The majority (91 percent) of surface disturbance would involve vegetation type conversion. Six percent or 4,165 acres of the surface impacts could result in a permanent commitment of resources.</p> <p>Management of the lands and minerals programs could result in an estimated 5,585 acres of surface impact. Approximately 3,735 acres are considered long-term and permanent impacts resulting from lands actions (land developments and agriculture following transfer to private ownership, and rights-of-way and leases).</p> <p>Approximately three percent of the total estimated surface impacts (1,850 acres) could be generated from locatable, leasable, and salable mineral activities. The majority would be short-term impacts associated with drill site exploration and temporary access. Longer-term but temporary impacts are those associated with development of deposits and necessary ancillary facilities.</p>	<p>Overall, a total of 63,665 acres could undergo some degree of surface impact. The majority (91 percent) of surface disturbance would involve land treatments. Five percent or 3,080 acres of the surface change could result in a permanent commitment of resources. These impacts would be due to land developments and agriculture following transfer to private ownership, roads, rangeland improvements, utilities, rights-of-way (ROW), leases, recreation facilities, and grants.</p> <p>Impacts from management of existing watershed, wildlife habitat, and livestock grazing activity plans and woodland products and transportation programs would be the same as or similar to those described under the existing environment.</p> <p>Management of the lands and minerals programs could result in an estimated 4,500 acres of surface impact. Approximately 2,650 acres are considered long-term and permanent impacts resulting from lands actions (land developments and agriculture following transfer to private ownership, and ROW and leases).</p> <p>The impacts from the minerals program would be the same or similar to those described in Alternative 1 with the following changes. ACEC designations, OHV closed areas, no surface occupancy and seasonal restrictions on leasable minerals could have minor negative effects on mineral resource development by restricting their activities and reducing the amount of surface disturbance.</p>	<p>Overall, a total of 63,640 acres could undergo some degree of surface impact. The majority (91 percent) of surface disturbance would involve land treatments. Five percent or 3,055 acres of the surface change could result in a permanent commitment of resources.</p> <p>Impacts from management of existing watershed, wildlife habitat, and livestock grazing activity plans and woodland products and transportation program would be the same as or similar to those described under the existing environment.</p> <p>Management of the lands and minerals programs could result in an estimated 4,475 acres of surface impact. Approximately 2,625 acres are considered long-term and permanent impacts resulting from lands actions (land developments and agriculture following transfer to private ownership, and ROW and leases).</p> <p>The impacts from the minerals program would be the same or similar to those described in Alternative 1 with the following changes. ACEC designations and withdrawal from mineral location, OHV closed areas, no surface occupancy and season restrictions on leasable minerals could have moderate positive effects on surface disturbance. The ACEC designations and proposed withdrawal from mineral location would restrict land from new mining claim location and require the filing and approval of a plan of operations for any exploration or development activities exceeding casual use.</p>	<p>Overall, a total of 78,565 acres could undergo some degree of surface impact. The majority (74 percent) of surface disturbance would involve land treatments. Ten percent or 7,980 acres of the surface change could result in a permanent commitment of resources.</p> <p>Impacts from management of existing watershed, wildlife habitat, and livestock grazing activity plans and woodland products and transportation program would be the same as or similar to those described under the existing environment.</p> <p>The commercial harvest of ponderosa pine forests in the Unkaret Mountains and the Parashant could result in surface impacts on up to 10,000 acres (13 percent of the total surface disturbance in the district). This could include management practices such as thinning, disease control, selective timber harvest, and associated road improvement. The surface impacts would be temporary in nature as the objective would be to maintain a viable productive forest.</p> <p>Management of the lands and minerals programs could result in an estimated 9,400 acres of surface impact. Approximately 7,550 acres are considered long-term and permanent impacts resulting from lands actions (land developments, airport and related developments, agriculture following transfer to private ownership, and ROW and leases).</p>

TABLE S - 7
SUMMARY OF IMPACTS BY ALTERNATIVE

Resource Impacted	Alternative 1 (No Action)	Alternative 2 (Preferred Action)	Alternative 3	Alternative 4
**Physical Component (cont.)		Beneficial impacts from the long-term protection of priority cultural resources would occur from ACEC, other special management areas, OHV and wood cutting area designations.	ACECs would be closed to mineral material disposals and no surface occupancy for oil and gas exploration. Impacts from the management of the cultural resource program would be the same as or similar to those described for Alternative 2 except that the Paria ACEC would be added. This would be a long-term beneficial impact to cultural resources.	The impacts from the minerals program would be the same as or similar to those described in Alternative 1 with the following changes. ACEC designation on the Paria Plateau and seasonal restrictions on leasable minerals could have minor positive effects on surface disturbance.
**Biological Component	<p>Actions under the existing MFPPs development for wildlife habitat, watershed, and livestock grazing management plans would continue (Table II-1).</p> <p>Approximately 36,900 acres (58 percent of the total surface impacts) of homogeneous and less productive stands of sagebrush or pinyon-juniper with poor understory vegetation conditions could be chained, plowed, burned, or treated with herbicides and seeded. The end result would be an increase in biological diversity on-site by creating change in a stagnant or undesirable plant community.</p> <p>The harvest of woodland products on 21,780 acres (34 percent of the total surface impacts), would have impacts similar to land treatments in that overstory is removed, allowing for a more productive understory.</p> <p>Locatable, leasable and salable minerals account for temporary impacts to vegetation and wildlife on about 1,850 acres (3 percent of the total surface impacts). Wildlife could be displaced near exploration and development sites generally for the duration of operations.</p>	<p>Impacts from surface disturbance would be the same as or similar to those described under Alternative 1.</p> <p>Beneficial impacts to special status species would occur from the ACEC and OHV designations and seasonal lease stipulations for oil and gas.</p> <p>Impacts which could cause a long-term decrease in biological diversity would be related to lands program actions (land developments and agriculture following transfer to private ownership, and rights-of-way and leases), permanent rangeland improvements, recreation facilities, and BLM transportation system upgrades which eliminate vegetation, wildlife or their interactions. Approximately five percent of the total impacts (3,080 acres) would be considered to be a permanent commitment of resources.</p>	<p>Impacts from surface disturbance would be the same as or similar to those described under Alternative 1.</p> <p>Impacts to special status species and riparian would be the same as or similar to those described under Alternative 2 except for the following: the Paria would be designated as an ACEC and would be closed to mineral location, closed to OHV, and no surface occupancy lease stipulations for oil and gas would be imposed. These additional management prescriptions would provide long-term benefits for special status species and riparian vegetation.</p> <p>Impacts which could cause a long-term decrease in biological diversity would be the same as described in Alternative 2. Approximately five percent of the total impacts (3,055 acres) would be considered to be a permanent commitment of resources.</p>	<p>Impacts from surface disturbance would be the same as or similar to those described under Alternative 1.</p> <p>Approximately 10,000 acres (13 percent of the total surface impacts) of ponderosa pine forest would be subject to commercial harvest. Harvest of some of the old growth on the Uinkaret and Parashant areas would produce a younger, healthier forest in the long term. Short term impacts to wildlife species would occur throughout the disturbance phase. Mobile wildlife would be temporarily displaced, but quickly returned to the changed and improved habitat. The harvested areas create more diverse vegetative communities than previously existed and would generally be utilized by a wider variety of species than were present prior to treatment. Adverse impacts could occur to wild turkeys, raptors and Kaibab squirrels. Timber harvest would result in beneficial impacts to deer over the long term.</p> <p>Impacts which could cause a long-term decrease in biological diversity would be the same as described in Alternative 2. Approximately ten percent of the total impacts (7,980 acres) would be considered to be a permanent commitment of resources.</p>

TABLE S - 7
SUMMARY OF IMPACTS BY ALTERNATIVE

Resource Impacted	Alternative 1 (No Action)	Alternative 2 (Preferred Action)	Alternative 3	Alternative 4
**Biological Component (cont.)	Impacts which could cause a long-term decrease in biological diversity would be related to lands program actions (land developments and agriculture following transfer to private ownership, and rights-of-way and leases), permanent rangeland improvements, recreation facilities, and BLM transportation system upgrades which eliminate vegetation, wildlife or their interactions.			
**Remoteness Component	<p>Current management of the watershed, grazing, wildlife, and woodland products programs would continue to bring about the greatest change to recreation experience opportunities. Impacts to physical settings created by land treatments, facility development, and associated roads would continue to shift recreation classes from the primitive end of the recreation opportunity spectrum toward the urban end and slowly decreasing the "remote" acreage available on the district. However, the change over time would be less noticeable as vegetation diversity and succession occurs within treated areas.</p> <p>Mineral exploration and development would impact physical settings with new and upgraded roads and development sites. These activities would impact recreation opportunities in semi-primitive nonmotorized and motorized classes by shifting settings toward the urban end of the recreation opportunity spectrum. However, these activities could be considered short-term, temporary impacts due to mitigation, which would include almost total rehabilitation of access roads, mine yards, and powerlines.</p>	<p>The designation of ACECs, establishment of SRMAs and RCAs, designation of areas closed to OHV and limited to designated roads and trails, guidelines for area B, and the interim management of two potential wild and scenic rivers would contribute beneficial impacts to "remoteness" and recreation management in the district.</p> <p>Impacts on remoteness and recreation from management of watershed, wildlife habitat, livestock grazing, wilderness, and woodland products, and minerals programs would be the same as or similar to those described under Alternative 1.</p> <p>Visual resources would have long term beneficial impacts from the Virgin River ACEC by ensuring maintenance of scenic qualities. No surface occupancy lease stipulations for slope and guidelines for area B would have long term benefits for visual resources. Long term adverse visual resource impacts from the ROW corridor could occur depending on location.</p>	<p>The designation of ACECs, establishment of SRMAs and RCAs, designation of areas closed to OHV and limited to designated roads and trails, guidelines for area B, and the interim management of two potential wild and scenic rivers would contribute beneficial impacts to "remoteness" and recreation management in the district.</p> <p>Impacts on remoteness and recreation from management of watershed, wildlife habitat, livestock grazing, wilderness, and woodland products, and minerals programs would be the same as or similar to those described under Alternative 1.</p> <p>The gradual increase in the region's population, the amount of leisure time and the improved recreation vehicles would continue to impact remoteness. The more visitors on the district the less likely is the opportunity to experience remoteness. This factor is one of the most important impacts on remoteness. OHV activities would be adversely impacted by closures and limitation to designated roads and trails in ACECs.</p>	<p>The designation of Paria ACEC, guidelines for area B, and the interim management of two potential wild and scenic rivers would contribute beneficial impacts to "remoteness" and recreation management in the district.</p> <p>Impacts on remoteness and recreation from management of watershed, wildlife habitat, livestock grazing, wilderness, and woodland products and minerals programs would be the same or similar as described under Alternative 1.</p> <p>Short term adverse impacts on remoteness, recreation and visual resources would occur from commercial harvest of timber. Existing roads would be upgraded to accommodate transportation of logs to market. Temporary access would be required during the harvest. Increases in noise and dust as well as sudden, visible change to the forest would impact the recreation opportunities and visual resources. In the long term, the harvest could benefit visual quality and enhance recreation opportunities.</p> <p>Visual resources could have long term adverse impacts from the RW corridor depending on location.</p>

TABLE S - 7
SUMMARY OF IMPACTS BY ALTERNATIVE

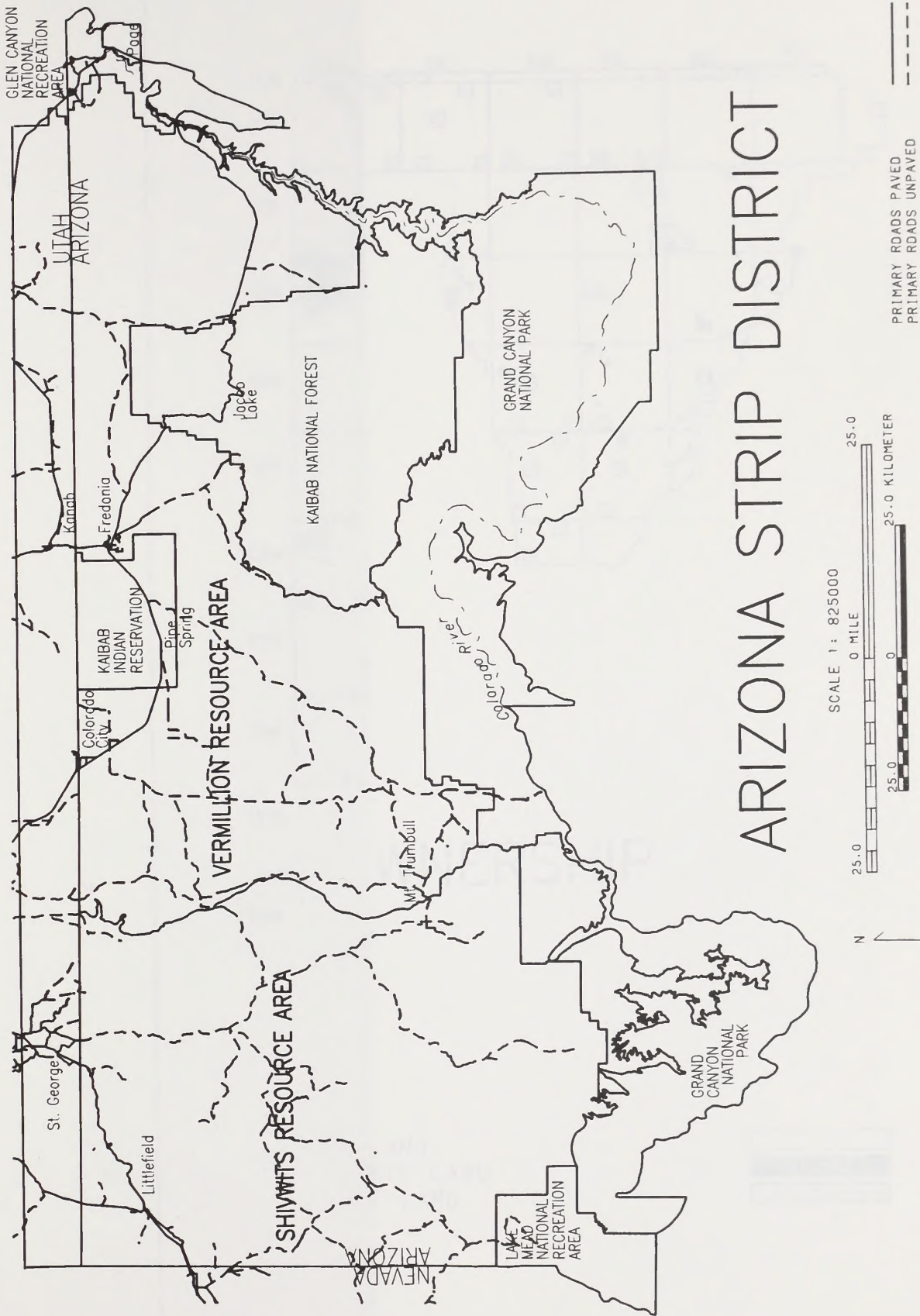
Resource Impacted	Alternative 1 (No Action)	Alternative 2 (Preferred Action)	Alternative 3	Alternative 4
<p>**Remoteness Component (cont.)</p>	<p>The greatest impacts of mineral exploration and development on "remoteness" could come in the form of temporary changes to the social setting from construction of new and upgraded roads. Improved access (until rehabilitated) could encourage the public to enter areas they previously avoided due to poor road conditions. Greater numbers of visitors in an area would then shift the social setting toward the urban end of the spectrum.</p> <p>The gradual increase in the region's population, the amount of leisure time and the improved recreation vehicles would continue to impact remoteness.</p> <p>Growth and development potential in the Littlefield-Beaver Dam area and the Colorado City-Cane Beds area could further impact recreation settings on nearby public lands.</p> <p>Ongoing management of the eight designated wilderness areas on the district would continue to preserve semi-primitive and primitive recreation experience opportunities in these areas.</p>		<p>Generally, "remoteness management" under Alternative 3 would significantly change current management's broad and general approach to one focused on experience opportunities and settings. Thus, in the long run, such management could be much more responsive to changing visitor needs and more custodial of the settings in which those needs are met.</p>	<p>The gradual increase in the region's population, the amount of leisure time and the improved recreation vehicles would continue to impact remoteness. The more visitors on the district the less likely is the opportunity to experience remoteness.</p>

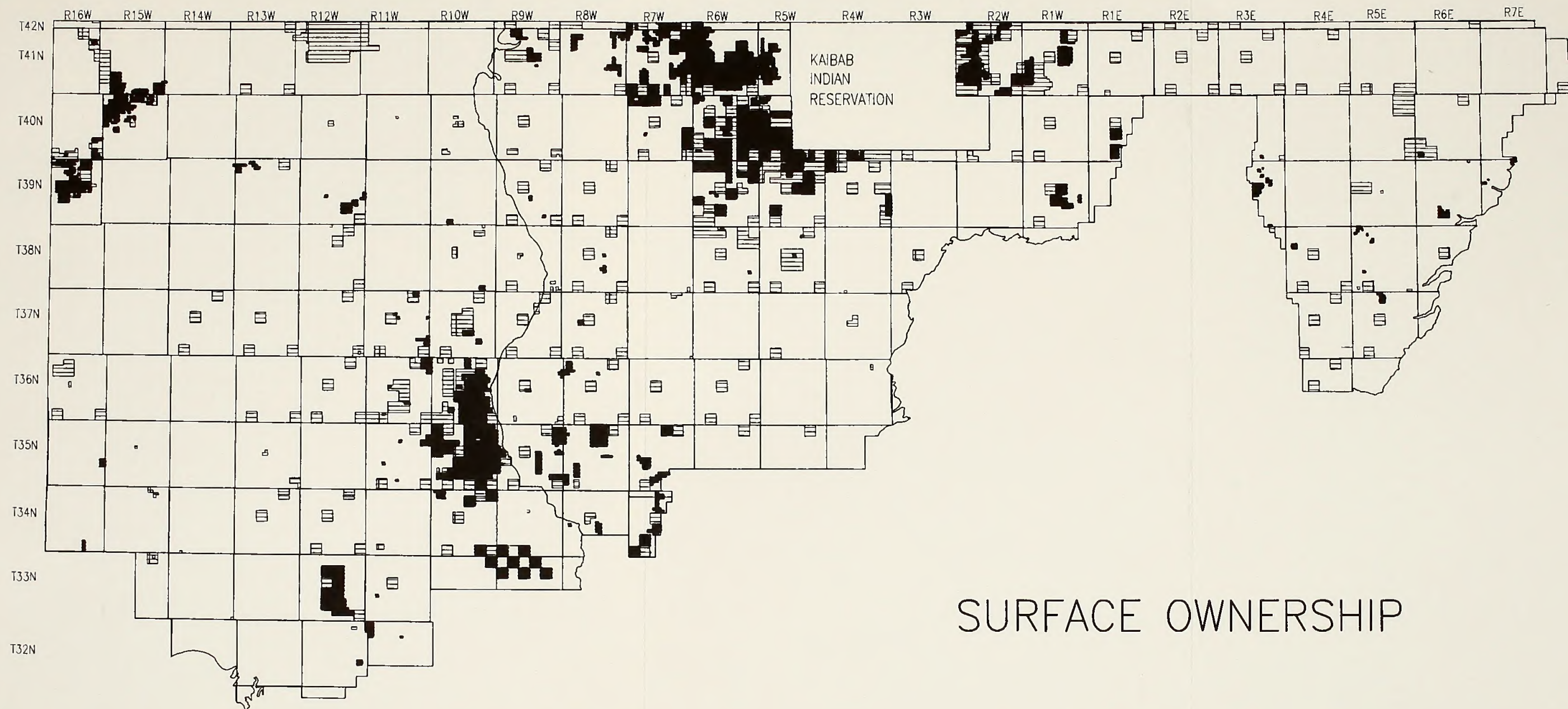
TABLE S - 7
SUMMARY OF IMPACTS BY ALTERNATIVE

Resource Impacted	Alternative 1 (No Action)	Alternative 2 (Preferred Action)	Alternative 3	Alternative 4
<p>**Socio-Economic Component</p> <p><u>Population:</u></p>	<p>Population is expected to grow at approximately two percent annually over the life of the plan. This would result in approximately 40 percent more people in the communities by the year 2005 than presently exist. The projected community expansion could result in the need to acquire public lands through direct sale, exchange, or R&PP lease/sale. Under current management, 2,800 acres would be available for this expansion. Over the life of the plan, however, approximately 3,470 acres could be needed to accommodate this growth. Thus, under current management, population growth in the existing communities could be significantly restrained through inadequate land availability.</p>	<p>Under Alternative 2, about 4,070 acres of land would be available for exchange, sale, or R&PP lease/sale and an additional 13,100 acres would be available for exchange or R&PP lease/sale. It is not expected that all of the identified lands would be transferred out of federal ownership as exchange would be first priority. The acreage identified for this purpose would accommodate a wide range of uses and foster good community planning. All lands identified as available for this purpose are located in the vicinity of existing communities.</p>	<p>Under Alternative 3, about 2,890 acres of land would be available for exchange or sale and an additional 20,120 acres would be available for exchange only. Land would not be available for R&PP lease/sale. Adoption of this management strategy would tend to favor private expansion of the communities. This could constrain growth of municipal services as land would have to be purchased by the communities for such uses as parks, municipal building sites, etc.</p>	<p>Under Alternative 4, 11,060 acres would be available for exchange, sale, or R&PP lease/sale. An additional 17,840 acres would also be available for exchange. This acreage would be adequate to accommodate population growth expected over the life of the plan. In addition, 6,200 acres of land would be made available for transfer in the Ferry Swale area to accommodate an airport and industrial park for the City of Page, Arizona. These developments, should they occur, would benefit Page and the surrounding communities through an increase in tourism related industries. The growth of these industries could lead to an increase in population in this area.</p>
<p><u>Income:</u></p>	<p>Even though the district would continue to remain open to natural resource uses in most areas, little change is expected in employment types. Employment opportunities in the manufacturing and mineral resource development fields would not be significantly affected by continuation of present management. While the continuation of existing management would encourage mineral resource development by allowing exploration and production to occur with few restrictions, it is not expected to cause a major increase in job opportunities in the mining sector. Construction related job opportunities would be somewhat curtailed as land for potential community expansion would be limited. The remaining job types, including those in the service sector directly associated with tourism, would not be affected by the continuation of current management.</p>	<p>Under Alternative 2, direct impacts to income types or per capita income within the local communities are not expected. A small amount of new revenue may be generated in the service sector related to tourism as a result of the SRMA and RCA designations. These impacts are not expected to be significant, however, as most tourism is expected to remain associated with the Grand Canyon and Lake Powell.</p>	<p>Under Alternative 3, direct impacts to income within the local communities could occur. Potential income derived from mineral development could impact areas proposed as ACECs. Cost of projects proposed within ACECs could increase. As a result, range improvement projects, lands actions, mineral resource exploration and development, etc., may be curtailed in these areas. This could result in a decrease in income derived from mineral resource exploration and development, construction, and grazing. Increases in tourism could increase income, however it is not expected to increase significantly as a result of adoption of this alternative.</p>	<p>Under Alternative 4, direct impacts to the local economy would occur. Any impacts would be associated primarily with airport construction and industrial park development, should they occur. The relative importance of the service sector would increase in the area as tourism expands. These jobs are generally lower paying jobs, thus per capita income is not expected to change significantly. Should an airport and related industrial park be constructed and new manufacturing industries be attracted to the area, job opportunities would increase. Depending upon the types of industry attracted, per capita income could also increase.</p>

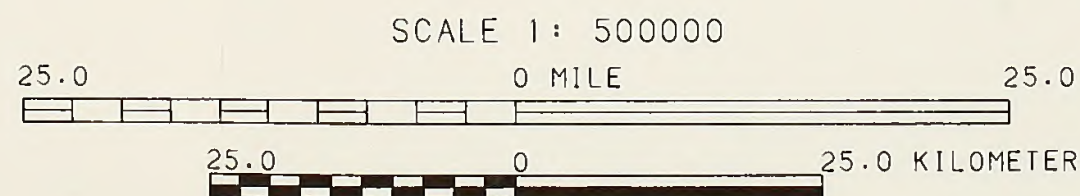
TABLE S - 7
SUMMARY OF IMPACTS BY ALTERNATIVE

Resource Impacted	Alternative 1 (No Action)	Alternative 2 (Preferred Action)	Alternative 3	Alternative 4
<p><u>Social Perceptions:</u></p>	<p>Under current management, natural resource use and development would continue. Users of the land who reside in the vicinity of the district would tend to favor this alternative as fewer restrictions would be imposed concerning resource use and development. On the other hand, users who favor the preservation of remoteness and naturalness would not tend to support this management option as the preservation or enhancement of remoteness and naturalness would not be favored above other aspects of public land management.</p>	<p>Management under Alternative 2 would be more restrictive than under current management. Under the preferred alternative, special management areas would be established and management prescriptions would benefit the preservation of natural values and remoteness. Depending upon the particular use, implementation of Alternative 2 would be seen as either adverse or beneficial to the user or user group. Guidelines for area B benefit the preservation of the feeling of remoteness and naturalness while providing for the use and development of natural resources in the area. In general, most people feel that the remoteness character of the district should be maintained. However, many local users feel no broad restrictions are needed in order to protect the specific resources or the feeling of remoteness or naturalness. Other groups and individuals perceive that threats to the identified resources are greater and that a greater level of control or restriction is needed in order to protect these resources.</p>	<p>Local residents could view this alternative with disfavor as traditional uses of the land and resources in special management areas would be restricted. OHV use would be more restricted, woodland harvest areas would be smaller, projects such as range improvements for the benefit of range and wildlife management could be constrained. Rights-of-way or proposals for mineral resource development in these areas would have stipulations attached to them which would significantly increase operating costs. As a result, some projects which may otherwise be initiated, could be cancelled, thus decreasing the potential for construction related jobs. On the other side of the public perception spectrum, various groups and individuals feel protection of remoteness and natural settings on the district are features which warrant this level of protection. Some may also feel that the level of protection proposed would be insufficient and the recreation setting that the district now offers is the most important resource on the public lands and should take precedence over all other resource uses.</p>	<p>Management under Alternative 4 would be slightly more restrictive than current management. Under this alternative, an ACEC would be established on a portion of the Paria Plateau for the protection of cultural, recreational, scenic, and geologic values. Timber harvest on Mt. Trumbull and on airport and related facilities near Page would be considered desirable by many local residents. However, citizens concerned with remoteness and secondary impacts on wilderness would feel this alternative is undesirable.</p>





SURFACE OWNERSHIP



BLM LAND
 PRIVATE LAND
 STATE LAND



PURPOSE AND NEED 1



CHAPTER I

PURPOSE AND NEED

This Arizona Strip District Resource Management Plan/Environmental Impact Statement (RMP/EIS) will guide BLM's management of 2.8 million acres of public land in the Shivwits and Vermillion Resource Areas. Sections 102 and 202 of the Federal Land Policy and Management Act (FLPMA) require the Secretary of the Interior to develop land use plans for all public land. This RMP/EIS conforms to FLPMA and the BLM planning regulations, 43 CFR 1600.

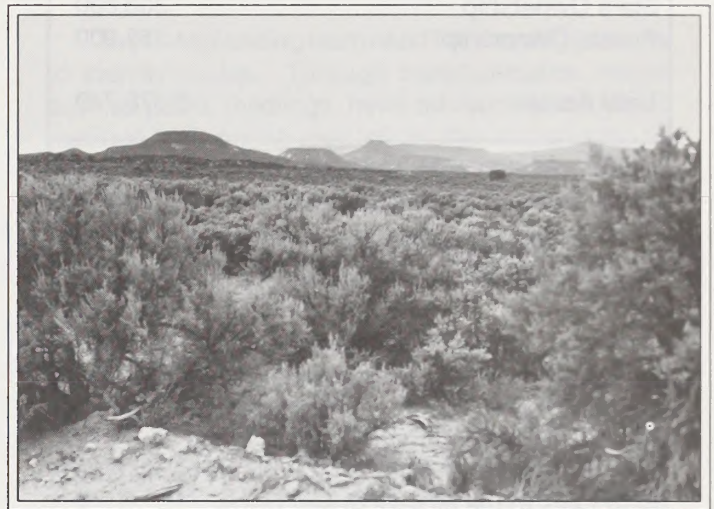
The National Environmental Policy Act (NEPA) requires federal agencies to prepare EISs on major federal actions. Since the RMP is a major federal action, this RMP is accompanied by an EIS. The EIS documents the potential environmental impact of implementing the preferred RMP as well as other alternatives and conforms to the Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 CFR 1500).

PURPOSE

This RMP/EIS is focused on resolving six key planning issues associated with management of public lands on the district. These issues were identified during BLM's scoping process which began on July 22, 1987 when BLM published a Notice of Intent (NOI) to prepare a RMP/EIS in the Federal Register. Following the issuance of the NOI, the BLM held several public meetings and sent mailouts asking the public to identify issues to be considered in the RMP/EIS. A detailed description of the scoping process is presented in Chapter V, Consultation and Coordination.

This RMP/EIS does not address two issues often described in land use plans. These two issues, rangeland management and wilderness, have been previously resolved on the Arizona Strip District BLM in separate EISs. Rangeland management was considered in the Vermillion Grazing EIS (1979) and Shivwits Grazing EIS (1980). Decisions following the Shivwits and Vermillion Grazing EISs have been adopted as management direction for livestock grazing in this RMP/EIS (Appendices 1,2, and 3). Two draft EISs were prepared on wilderness suitability in 1981 and 1982. In the Arizona Wilderness Act of 1984, Congress designated 265,500 acres of BLM-administered lands as wilderness, completing this effort. Two wilderness plans have been written and approved and three draft plans have been written. A cooperative plan is being drafted by the Forest Service and BLM.

This RMP/EIS replaces land use planning decisions in the Shivwits and Vermillion MFPs. These decisions have guided BLM's management of public land on the Arizona Strip District for the past seven and thirteen years respectively. The MFP decisions that have not been completed are being carried forward and are incorporated into this RMP. Completed or obsolete decisions will be dropped. Chapter II summarizes MFP decisions to be carried forward in management guidance common to all alternatives.



Wolf Hole Valley looking northwest towards Mustang Knoll and Black Rock Mountain.

DESCRIPTION OF THE PLANNING AREA

The district includes BLM-administered lands in Arizona north and west of the Colorado River to the Utah state line and west to the Nevada state line (Map S-1). Communities within the area are Page, Fredonia, Colorado City, and Littlefield/Beaver Dam. Communities in adjoining states are Kanab and St. George in Utah and Mesquite in Nevada. Land holdings on the district consist mostly of large blocks of federal lands administered by BLM, with several blocks of state land near communities scattered throughout the district. Private lands are concentrated mostly around the communities of Fredonia, Colorado City, and Littlefield/Beaver Dam. One other large block of mostly uninhabited private land is at Mt. Trumbull, about 60 miles south of St. George (Map S-2). Table I-1 shows land surface administration on the Arizona Strip.

TABLE I -1
Land Surface Administration, Arizona Strip

Ownership	Acres
Federal (north of the Colorado River)	
BLM Administered Public Lands	2,868,000
North Kaibab Ranger District	655,000
Glen Canyon National Recreation Area	40,000
Lake Mead National Recreation Area	300,000
Grand Canyon National Park	900,000
Pipe Springs National Monument	40
Kaibab-Paiute Indian Reservation	121,000
State Ownership	333,800
Private Ownership	152,900
Total Acres	5,370,740

NOTE: All acreages rounded to the nearest 1,000 acres except Pipe Springs National Monument.

Source: Arizona Strip District Files

A vast, remote, and interesting area, the district consists of broad plateaus, rolling valleys, impressive cliffs, and rugged country. This landscape is punctuated by mountain ranges, volcanic cones, and to the west, a drop-off of nearly 5,000 feet from the Grand Wash Cliffs to the Mojave desert below.

The majority of the district is located within the Colorado Plateau physiographic province. Only that portion of the district lying west of the lower Grand Wash Cliffs is within the Basin and Range province. Relief of the area was largely created by the carving of the major tributaries to the Colorado River, i.e. the Paria River, Kanab Creek, and Virgin River. The plateau province is rough, ranging in elevation from nearly 6,000 feet on the Paria Plateau to 3,000 feet along the lower Hurricane Valley and south St. George Basin. West of the lower Grand Wash Cliffs, typical basin and range type topography dominates, irregular elongated valleys bordered by ridges and escarpments. Elevations in this area range from 6,000 feet along the Grand Wash Cliffs to less than 2,000 feet near lower Grand Wash. The two highest points on the district are Mt. Bangs in the Virgin Mountains and Mt. Trumbull, both reaching over 8,000 feet.

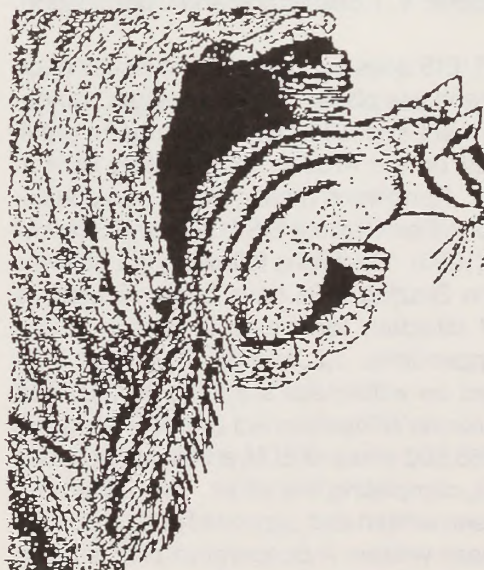
Much of the public lands consist of rolling sagebrush clad country and large acreages of pinyon-juniper. However, in the Mt. Trumbull, Black Rock, and

Parashant areas are 15,000 acres of ponderosa pine forests. Other common vegetation types include grasslands, salt desert shrub, mountain brush, and in the low elevations, prominent stands of blackbrush, creosote bush, and Joshua trees.

The public lands involved have important wildlife, minerals, archaeological, wilderness, scenic, recreation, and grazing values. A number of areas in remote locations adjacent to the Grand Canyon National Park, Lake Mead, and Glen Canyon National Recreation Areas, Kaibab National Forest, and designated wilderness areas have exceptional natural features which provide unique recreational experiences in backcountry settings.

The limited and difficult access, the remoteness of much of the district, and the low human population are a large part of its appeal and uniqueness. Except for a highway which crosses the deep Colorado River gorge at the extreme east end of the district, ground vehicle access from the south is impossible due to the Grand Canyon. Three highways cross the northern boundary of the district. No paved roads extend into the interior, but over 5,262 miles of unpaved roads and truck trails criss-cross the area. Very few roads extend into the rugged and isolated southern region.

A wide variety of multiple uses occur and public uses have increased steadily in recent years. The resources available and the associated public uses and industries are important to local communities, regional economies, and the nation. The most prominent public uses are ranching, which occurs throughout the area; uranium exploration and development, which are concentrated in the Vermillion Resource Area; and dispersed recreation.



PLANNING PROCESS OVERVIEW

The BLM resource management planning process consists of nine steps described below and graphically illustrated in Figure I-1.

Step 1: Issue Identification

This planning step is designed to identify major problems, concerns or opportunities associated with the management of public land in the RMP area. Issues are identified by the public, the BLM, and other governmental entities. The planning process is focused on resolving the identified planning issues.

Step 2: Planning Criteria

Planning criteria include policies, laws, regulations, and guidelines for resolving issues, developing alternatives, and choosing a proposed plan.

Step 3: Inventory and Data Collection

Certain kinds of biological, physical, social or economic information needed to resolve the planning issues is collected and analyzed. Inventory information is used in determining how public land resources will respond under each of the alternatives.

Step 4: Analysis of the Management.

The Management Situation Analysis (MSA) identifies the ways BLM manages public lands on the district and opportunities to better manage these lands.

Step 5: Formulation of Alternatives

BLM formulates a range of alternatives for managing resources on the district. A range of alternatives are developed to resolve significant planning issues and address specific management concerns on the district. Alternatives include a preferred plan, alternative plans, and no action (current management).

Step 6: Estimation of Effects

This step involves estimating the environmental effects of implementing each of the alternatives. Impacts are estimated in order to provide a comparative evaluation of impacts in compliance with CEQ regulations for implementing NEPA (40 CFR 1500).

Step 7: Selection of the Preferred Alternative

BLM identifies a preferred alternative. The draft RMP/EIS is then prepared and distributed for public review.

Step 8: Selection of Resource Management Plan

BLM selects a proposed resource management

plan after reviewing public comments and publishes it with a final EIS. Decisions become final after a 30-day appeal period following the EIS publication.

Step 9: Monitoring and Evaluation

This step involves the collection and analysis of long-term resource condition and trend data to ensure the plan is achieving its objective of resolving the identified issues and achieving other desired results. Monitoring continues from the time the RMP is adopted until changing conditions require revision of the whole plan or any portion of it (Appendix 4; Resource Monitoring and Evaluation Plan).

PLANNING ISSUES

The BLM planning team used the scoping process to identify issues. Through communication media such as public meetings, news advisories, and direct mailings, the public was given the opportunity to inform the BLM about issues they were concerned about. The BLM planning team analyzed public comments and identified six major planning issues for resolution in the RMP/EIS. The following describes each issue identified for study.

Issue 1: Lands

Are there public lands needed for community expansion near Littlefield, Beaver Dam, Colorado City, Fredonia, and Page? Should public lands be used for airports and related facilities, public buildings and parks?

Are there BLM-administered lands suitable for private development which can be exchanged for private lands that could meet long-term public and resource management objectives?

Where should rights-of-way corridors be retained or established? How wide should they be to meet future powerline and pipeline needs?

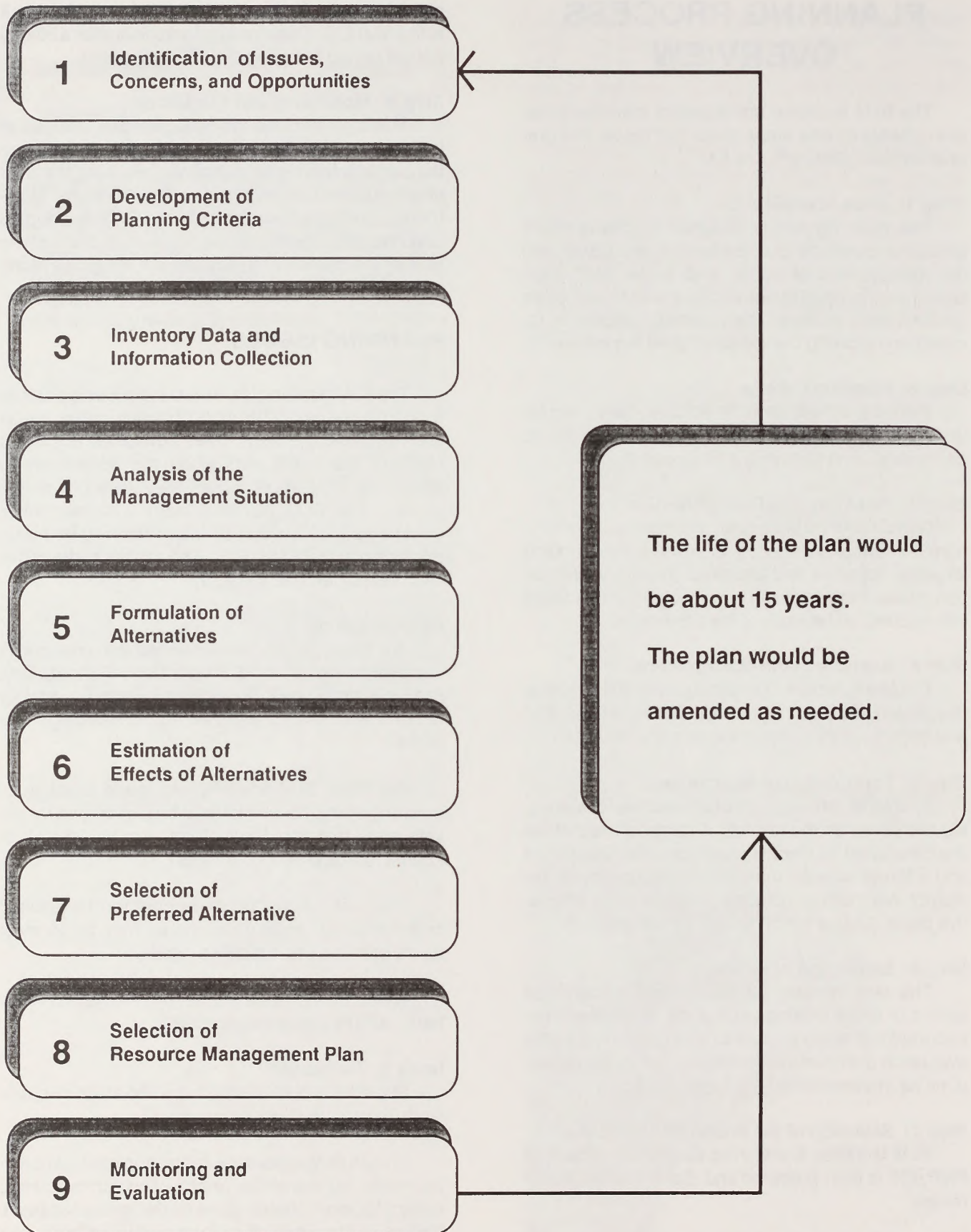
Which public lands should be retained for long-term multiple use management?

Issue 2: Recreation

Should the BLM manage specific areas of public lands to maintain their remoteness?

Should BLM encourage recreation use by improving roads, signing areas, or providing campgrounds, overlooks, etc.? Should areas be designated as open, limited, or closed to off-highway vehicle (OHV) use? Are there lands near communities suitable for designated OHV use areas?

FIGURE I-1. Steps in the Resource Management Planning Process



Issue 3: Minerals

How can BLM manage and encourage mineral exploration and development and still preserve other resource values? What are the cumulative impacts of mineral exploration and mining?

Are there areas that have significant renewable resource values that require special stipulations and can only be protected by restricting mineral exploration and development?

Are there areas that have high mineral resource potential which should remain open to exploration and development with as few restrictions as possible?

Issue 4: Access

How should access be managed to meet the objectives of resource management? Should new roads be built and how should existing roads be maintained?

Are there roads that should be closed to protect special resource values?

Issue 5: Cultural Resources

What actions should BLM take to protect cultural resources?

Issue 6: Special Designations

Are there lands that should be designated as Areas of Critical Environmental Concern (ACECs) to protect important resource values or to protect human life and safety from natural hazards?

Should certain areas be designated as RCAs or SRMAs?

Should the existing Virgin River Scenic Area and the Vermillion Cliffs Natural Area designations be continued and/or designated as ACECs or should they be eliminated?

Do the Paria and Virgin Rivers meet the eligibility criteria for Wild and Scenic River designation?

PLANNING CRITERIA

Planning criteria set out the legal parameters and management goals that guide and direct the development of the RMP. These criteria were developed by BLM and reviewed by the public to assure the planning process stayed focused on the issues. The criteria were used at four stages of the planning process:

resource inventory, management situation analysis, formulation of alternatives, and selection of preferred alternative.

BASIC CRITERIA

Basic planning criteria come from FLPMA. They are as follows:

- follow the principles of multiple use and sustained yield
- use a systematic interdisciplinary approach, fully considering physical, biological, economic and social aspects of public land management
- identify, designate, protect and specially manage areas of critical environmental concern
- consider relative significance of the public land products, services, and use to local economies
- rely on the inventory of the public lands, their resources, and other values, to the extent such information is available
- consider present and potential uses of public lands
- consider impact of federal actions on adjacent or nearby non-federal lands and on private land surface over federally owned subsurface minerals
- consider the relative scarcity of the values involved and the availability of alternative means and sites for realization of those values
- weigh long-term benefits and consequences of proposed actions against short-term benefits and consequences
- comply with applicable pollution control laws, including state and federal air, water, noise, and other pollution standards and plans
- coordinate, to the extent consistent with public laws, with resource planning and management programs of other federal departments and agencies, states and local governments, and Indian tribes
- provide the public with early notices and frequent opportunities to participate in the preparation of plans,
- manage the public lands so as to prevent unnecessary or undue degradation of the lands.

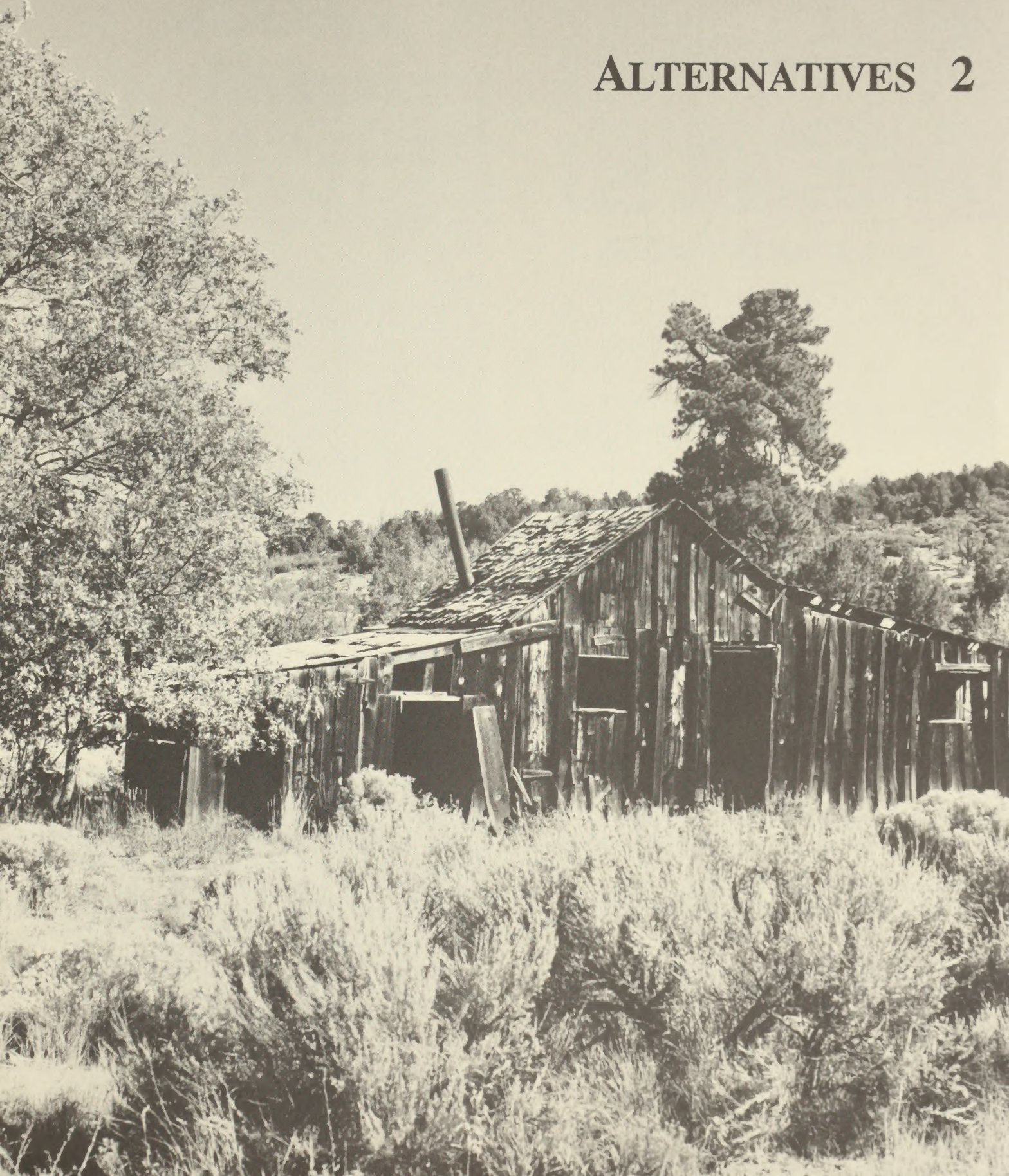
SPECIFIC CRITERIA FOR ISSUE IDENTIFICATION

Changes in current resource management practices were considered for any of the following conditions:

- management of one resource significantly constrains or curtails use of another resource
- existing land use allocations conflict with agency resource management policies or guidance
- existing resource management practices conflict with management plans, policies, and guidance of another federal surface management agency
- documented public controversy regarding management of a specific resource value indicates a management concern.



ALTERNATIVES 2



CHAPTER II

DESCRIPTION OF ALTERNATIVES

INTRODUCTION

Four land use plan alternatives are described in detail in this chapter. Each alternative represents a complete plan to guide future management of public lands on the district. Management decisions and guidance common to all alternatives are identified as part of each alternative description. This guidance is brought forward from existing management framework plans (MFPs), activity plans, and the laws, regulations, and policies by which BLM is directed.

Figure II-1 shows the process used to develop the alternatives for the RMP. Alternative descriptions are made up of two major elements--existing management that would continue and new RMP decisions. The number and type of new RMP decisions were identified by reviewing the current management situation, public comments, manual requirements and management direction. How to make these determinations was based on districtwide objectives and specific guidance developed for lands with unique/sensitive resource values and guidance for lands that are common and less fragile. The objectives and guidance were developed by reviewing the various resource values and programs on the district. This process was followed for development of each alternative. However, the size and shape of the unique/sensitive areas changed by alternative to reflect different public concerns.

PLAN OBJECTIVES AND GUIDELINES

Public lands administered by the Arizona Strip District are rich in wildlife, archaeological, wilderness, scenic, recreation, mineral, and forage values. The available resources include a major uranium industry, rapidly increasing recreation activities, and numerous ranching operations. These resources and associated public uses are important to local communities, regional economies, and the nation. Moreover, some of these public lands are adjacent to Grand Canyon National Park, Glen Canyon and Lake Mead National Recreation Areas, Kaibab National Forest and Kaibab Indian Reservation. Other public lands have unique values and special management needs which require evaluation as possible areas of critical environmental concern (ACEC).

The overall goal of the district is to provide quality multiple use management of public lands. The RMP alternative selected for implementation on the district will help accomplish this goal.

General objectives have been established to ensure that the RMP will provide quality management direction that responds to the issues and meets the specific resource needs. In addition, a series of guidelines have been defined to achieve these objectives.

DISTRICTWIDE OBJECTIVES

The following districtwide objectives have been established to provide comprehensive guidance for all public land uses and management activities on the district:

- manage public lands and resources under the concept of multiple use to attain the optimum combination of uses
- manage to balance use and conservation of renewable resources to provide sustained productivity
- manage public lands in a manner which recognizes the nation's need for domestic sources of energy, minerals, and livestock products from the public lands and the importance of these industries to local and regional economies
- provide special management emphasis in areas with unique features or special management needs
- maintain cooperative relations and programs with public land users, interest groups and other government agencies
- manage for diverse recreation opportunities for the increasing number of visitors to public lands
- manage livestock grazing to maintain productive rangelands which meet forage, watershed, and wildlife needs
- encourage orderly development of mineral resources while protecting, to the extent practicable, non-mineral resources and values

- maintain and enhance wildlife habitat to ensure viable populations and natural diversity

- protect and, as appropriate, enhance public land resources through the suppression and management of wildfires and use of prescribed fire

- enforce the laws and regulations governing protection of public lands and visitors

- determine ecological site conditions and potentials; identify the desirable plant communities attainable on sites for multiple-use management; and manage vegetation to meet the vegetative management status for ecological sites

- manage acquired lands according to final RMP decisions in specific areas

- maintain the open space, scenic character and remoteness of public lands

- adjust land tenure as necessary to improve federal land management effectiveness, improve resource values and provide lands for public and private uses

- maintain existing access where needed to meet public and administrative needs

- manage public land resources in consultation with adjacent federal or state management agencies to avoid unnecessary adverse impacts

- construct new access only where needed to meet public needs. Close and rehabilitate newly constructed access roads upon termination of the specific needs

- rehabilitate all surface disturbances to the extent practicable upon termination of use to protect soil, vegetation, water and other environmental values to blend into surrounding terrain and settings

- manage all mineral exploration and development to prevent undue or unnecessary degradation to the environment

- use special stipulations where applicable and prudent to minimize long term impacts to the visual quality of sensitive landscape characteristics

- acquire state and private lands that will further improve federal land management (through exchange, sale or donation) where there is a willing party

- maintain/enhance the existing visual quality

MANAGEMENT GUIDELINES

In addition to districtwide objectives, guidelines have been developed to provide consistent management of public lands on the district which call for different management intensity levels and emphases. These were formulated due to the existence of areas with special resource concerns, sensitivities, or characteristics. The following summarizes the management guidelines for the two broad land areas defined as areas A and B. Locations of these areas are identified by alternative in Maps II-1, II-2, and II-3. These areas and associated guidelines were used to guide development of the resource management alternatives. They are not intended to be special management areas, but are used to help ensure consistent management in specific geographic areas.

AREA A

Most of the district consists of lands in area A. These lands contain a wide variety of resources and values that require continued multiple use management. Most of the lands do not contain unusual characteristics and are not subject to unusual demands requiring special management attention.

Management guidelines for these areas would remain similar to current management practices which are considered adequate. Existing laws, regulations, policies and procedures would be followed. The following management guidelines would apply to area A:

- designate off-highway vehicle (OHV) use as open or limited to existing roads and trails

- issue commercial, non-commercial, negotiated sales, and free-use permits as appropriate for woodland products and mineral materials

- provide for primitive motorized and primitive non-motorized recreation

- lands determined to be necessary for community expansion could be transferred out of federal ownership, however, the first option will be through exchange

AREA B

Area B includes land identified by the public and BLM as having unique resource values and special management needs. These lands have characteristics that include important scenic values and exceptional natural features that offer quality recreational opportunities in

remote backcountry settings. With few exceptions, public lands in area B are more remote than those in area A. These lands are generally not developed and presently do not receive a great deal of public use.

Management guidelines for public lands in area B would be focused on the enhancement of various resource values while allowing for multiple use. BLM would manage authorized uses and prepare management prescriptions to protect remoteness or other unique resource values. The following management guidelines would apply to area B:

- close and rehabilitate roads where no public or administrative need exists
- designate OHV use as limited to designated roads and trails or closed
- implement special resource coordinated management plans to protect the fragile character and unique resource values of specific areas
- permit the removal of woodland products and mineral materials only when such disposal would enhance other resource values of the area
- land will not be transferred out of federal ownership unless specifically required by law
- provide for primitive motorized and primitive non-motorized recreation

Special stipulations would be developed during the National Environmental Policy Act (NEPA) process to ensure that objectives and guidelines are met. Special stipulations that may be included (not inclusive) are found in Appendix 5.



THE RANGE OF ALTERNATIVES

Following the identification of guidelines for the two areas of public lands, it was necessary to define alternatives which promote attainment of the objectives of the plan. Four alternatives were formulated for analysis.

In accordance with Council of Environmental Quality (CEQ) regulations, these alternatives represent a range of management opportunities. The CEQ regulations also direct agencies to identify a preferred alternative. Accordingly, the alternatives presented and analyzed include BLM's preferred management plan, identified as the preferred alternative.

The four alternatives were developed by an interdisciplinary planning team. The team reviewed information received through the public scoping process and other available information. Areas with special resource values were evaluated for possible areas of critical environmental concern (ACEC) designation (see Appendix 6), establishment of special recreation management areas (SRMAs) or resource conservation areas (RCAs).

Most of the land use actions in this RMP would become implemented upon signing of the RMP record of decision (ROD) by BLM's Arizona State Director. The plan decisions become final as early as 30 days after the final RMP/EIS has been released to the public. Implemented actions include designation of areas of critical environmental concern, utility corridor locations and widths, communication sites, special management areas, and OHV designations.

Other actions identified in this RMP cannot immediately be implemented upon approval by the State Director. For example, mineral withdrawals must be approved by the Secretary of the Interior and in some cases reviewed by congress (FLPMA Sec. 203). Thus, actions such as these may be recommended in this RMP but would not become valid until approved by the appropriate authority. However, it is the intent of BLM to pursue all actions recommended in this proposed RMP included in the record of decision.

Other actions in the RMP require further detailed planning be completed before on-the-ground work begins. For example, watershed activity plans, OHV designations, OHV designated road closures plans, and forest and woodland management plans would be prepared to meet RMP objectives. Other RMP decisions would not be implemented until existing activity plans are revised to comply with RMP objectives and decisions. This detailed planning would occur as personnel and funds are made available.

DESCRIPTION OF ALTERNATIVES

The following is a summary narrative of the alternatives. To obtain a complete description of how a program would be managed the reader should review "Management Guidance Common to All Alternatives" and specific actions proposed for a particular alternative. Specific actions are presented in Tables II-1 and II-2.

ALTERNATIVE 1 (NO ACTION)

Alternative 1 would consist of managing public lands using current policies, MFP guidance, and existing resource allocations. The MFPs were written in 1973 and 1981. Many MFP actions have been implemented. Public use has increased substantially. Public interest and concerns about the management of the public lands have become intense. Under this alternative, changing circumstances would be handled on a case-by-case basis and would require MFP amendments. Under this alternative, management guidance regarding the six major planning issues would be as follows:

Lands Issue:

Approximately 2,800 acres of public land identified in the previous land use plans could be available for ownership adjustment subject to existing laws such as the endangered species act. The specific location of these lands was not identified; they occur around Littlefield/Beaver Dam, Colorado City and Fredonia areas. Specific tracts of land desirable to acquire were not identified. Right-of-way corridor designations of two different widths would continue.

Recreation Issue:

The remoteness recreational value is not formally recognized and consistent management actions are not taken to preserve this value. No new special SRMAs would be identified. Off-highway vehicle use would continue to be restricted in the Shivwits Resource Area and not in the Vermillion Resource Area.

Minerals Issue:

Locatable mineral development would continue to be allowed on public land except for the 297,000 acres presently withdrawn. Areas requiring special stipulations are not identified. Oil and gas leasing would continue to be allowed without oil and gas leasing categories, processed on a case-by-case basis.

Access Issue:

No areas are restricted to new permanent road development. When needed a new road can be built. No roads are identified for closure.

Cultural Resources Issue:

Cultural resources would continue to be evaluated and protected on a case-by-case basis in accordance with laws, regulations, and BLM policy when clearances are required. No special designations would occur.

Special Designations Issue:

Under this alternative no special designations would occur. All areas would continue to receive nearly equal management attention.

ALTERNATIVE 2 (PREFERRED ALTERNATIVE)

This alternative is BLM's preferred plan. In accordance with Federal Land Policy and Management Act (FLPMA), a diverse combination of balanced uses would be accommodated and managed, while also providing a responsive approach to the planning issues, resolution of conflicts, the need for more focused management in areas with special values and the management objectives of adjacent federal lands.

Multiple uses which now occur and are reflected in the preferred plan's objectives, decisions and management programs include, but are not limited to, diverse kinds of recreation, livestock grazing, mineral exploration and production, wildlife development and utilization, watershed, wild burros, woodland products, designated wilderness, rights-of-ways and community expansion needs.

BLM would manage for the full array of multiple uses in both areas A and B. Some areas (Map II-1) would be managed to protect the natural back country resource setting, retain the remote character of the areas, and preserve the irretrievable unique resource values (area B) while other areas would be identified to promote more traditional uses such as grazing, realty actions, minerals, and wildlife (area A).

The following is a brief description on how the plan addresses the six planning issues:

Lands Issue:

Small scattered tracts of public land (4,070 acres) near the communities of Mesquite, Littlefield, Colorado City, and Fredonia have been identified for potential ownership transfer. These tracts meet sale criteria as described in Sec. 203(a) of FLPMA. These same lands plus an additional 13,100 acres would be made available for various public purposes and for exchange to meet long term public needs. Disposals that involve habitat of species protected by the Endangered Species Act must

result in a net affect that is positive or neutral and not jeopardize that species recovery. The BLM would actively seek opportunities to acquire desert tortoise habitat where it would improve the likelihood of recovery.

Lands near Page would not be made available for an airport because of conflicts with adjoining land uses and the proposed SRMA designation of the area for cultural and recreational purposes.

A one-mile-wide right-of-way corridor (except in the Ferry Swale area where it is 1-mile wide and the Beaver Dam Slopes where R/W would be considered on a case-by-case basis) containing the Navajo-McCullough powerline and a corridor extending from Rosy Canyon to Lime Kiln Canyon would be designated to meet major transmission needs.

Recreation Issue:

An objective of the plan is to preserve the open space and backcountry character of the area. Approximately 613,000 acres of land are identified as having unique or special values (i.e. remoteness) where special protective measures are proposed. Dispersed unregulated recreation is proposed for most of the district with the exception of the Canyons and Plateaus of the Paria. Recreation activities in this area are recognized as a priority land use and would provide a variety of different dispersed recreational experiences. Off-highway vehicles would be limited to existing roads and trails on 1,811,900 acres, designated roads and trails on 690,400 acres, closed on 310,700 acres, and 1,400 acres are open in two small areas near communities.

Minerals Issue:

Most of the district would continue to be open to mineral activities. No new withdrawals are proposed and 20,863 acres are proposed for withdrawal revocation. In order to ensure minimal mining impacts to unique renewable resource values of the district, 613,000 acres would be subject to special protective stipulations in area B. "Due to ACEC or OHV closure designations, 1872 Mining Law activities (other than casual use) proposed in these areas would require plans of operations, even for disturbances of five acres or less. Seasonal restrictions and no surface occupancy stipulations would also be required for oil and gas leasing to protect unique renewable resource values.

Access Issue:

The existing 5,402 miles of roads on the district should meet most future needs. In areas with special remoteness value, no new permanent roads would be allowed. Roads not needed for resource management or

to protect resource values would be closed on 690,400 acres where OHVs would be limited to designated roads and trails.

Cultural Resources Issue:

Six areas with significant cultural values have been included in ACEC designations to help ensure proper management and protection. Cultural properties within six areas will be managed for public education, enjoyment, and scientific study. Other areas would continue to be managed under current laws and policy.

Special Designation Issue:

Special designations are proposed to help protect special status plants and animals, cultural values, and recreational values. Ten ACECs are proposed, totaling 59,210 acres. The Virgin River from the Utah state line to the mouth of the gorge has been found eligible for wild and scenic river study. The Paria River has been found suitable for wild and scenic river designation. The Parashant and Mt. Trumbull/Mt. Logan areas are recommended as resource conservation areas (RCAs) where their multiple use values would be emphasized and interpreted for public enjoyment. The Canyons and Plateaus of the Paria are proposed as a SRMA, complementing a proposal in Utah.

ALTERNATIVE 3

Alternative 3 is similar to Alternative 2 in content and structure. It is comprehensive in scope and presents a viable alternative for multiple use management of the public lands with even greater emphasis on environmental protection, more restrictive prescriptions for the SMAs and policies favoring a variety of recreation uses. This alternative also responds to the planning issues, the need for more focused efforts to protect and manage areas with special values and the management objectives of adjacent federal lands. Under Alternative 3 (Map II-2), there are more and/or larger areas which would be managed under area B guidelines.

Multiple uses which would be managed for under this alternative include, but are not limited to, diverse kinds of recreation (especially primitive types in backcountry settings), livestock grazing, mineral exploration and development, wildlife development and utilization, watershed, wild burros, woodland products, designated wilderness, rights-of-way and community expansion needs.

This alternative supports some of the concerns raised by environmental groups during the public scoping process. Management direction would emphasize a variety of recreational uses and respond to concerns for increased

environmental protection. The following is a brief description of how the plan addresses the planning issues:

Lands Issue:

Up to 2,890 acres of public land would be made available for ownership adjustments, plus an additional 12,120 acres could be made available for exchange only. Ownership adjustments would be accomplished through land exchanges. Lands with high public values would be acquired in the same manner. Proposed utility corridors would be the same as Alternative 2. Airports, communication sites, and withdrawal revocation proposals would change slightly (more restrictive) from the preferred alternative.

Recreation Issue:

Mt. Trumbull/Mt. Logan and Parashant areas, plus the Canyons and Plateaus of the Paria are recognized in this alternative as having important recreation values and are proposed as SRMAs. Recreation would be recognized as a priority land use in these areas with emphasis on preserving natural values and remoteness. In this alternative, more lands would be placed in the limited to designated roads and trails and closed to OHV categories than any other. However, one of the primary recreation experiences managed for is backcountry vehicle exploring.

Minerals Issue:

Most of the district would continue to be open to mineral activities, however, all ACECs would be withdrawn from mineral location and limited to no surface occupancy for leasing. Seasonal leasing restrictions would be imposed on leasing in areas with important wildlife values. No surface occupancy stipulations would be used to protect scenic areas with steep slopes.

Access Issue:

Areas managed under the more restrictive B access guidelines would increase in size. In areas where OHVs are limited to designated roads and trails (558,800 acres), roads not needed for resource management would be closed. New roads would be closed and rehabilitated when they are no longer needed.

Cultural Resources Issue:

Management prescriptions for ACECs with cultural values would have more restrictive management (i.e. withdrawn from mineral location, closed to woodland harvest, vegetation manipulation would be prohibited, and OHVs would be limited to existing roads and trails). A new ACEC on the Paria Plateau would be established to protect cultural and scenic values.

Special Designation Issue:

The number of special designations would be similar to Alternative 2. Since more of the land would be managed under area B guidelines, more restrictive management is proposed. The Mt. Trumbull/Mt. Logan and the Parashant RCA designations would be changed to SRMAs. An ACEC would be added to the Canyons and Plateaus of the Paria SRMA. The Fort Pierce and Marble Canyon ACECs would be enlarged to include more sensitive resource values.

ALTERNATIVE 4

Among the alternatives, this one comes closest to representing the preferences and concerns of local resource consumptive users and individuals and companies involved in the primary industries on the district. It is an alternative for multiple-use management emphasizing policies and programs favoring use and development of resources over most of the district with less restrictions and few special management areas.

Multiple uses which now occur and are reflected in the preferred plan's objectives, decisions and management programs include, but are not limited to, diverse kinds of recreation, livestock grazing, mineral exploration and development, wildlife development and utilization, watershed, wild burros, woodland products, designated wilderness, rights-of-ways and community expansion needs.

Under this alternative (Map II-3), resource management would emphasize resource uses while providing for environmental protection. This alternative would address the planning issues as follows:

Lands Issue:

Ownership adjustments could be made on up to 28,900 acres, with an additional 6,200 acres made available for an airport and related facilities in the Ferry Swale area. New communication facilities would continue to be allowed on Black Rock Mountain and Seegmiller Mountain would also be available for development. The same withdrawals would be revoked as in Alternative 2, plus the Vermillion Cliffs Natural Area withdrawal would be revoked.

Recreation Issue:

With the exception of wilderness areas, the district would be managed for extensive recreation uses. No special recreation designations are proposed. Off-highway vehicle use would mostly be limited to existing roads and trails, with few roads being closed. Four open OHV areas would be established near communities.

Minerals Issue:

Most of the district would continue to be open to mineral location with no new withdrawals proposed. The existing Vermillion Cliffs Natural Area withdrawal would be revoked. Only a few areas with unique renewable resource values would be considered for special protective mineral stipulations.

Access Issue:

Areas where some roads could be closed and where access would be limited to designated roads and trails is limited to a few mountain and canyon areas and portions of the Paria Plateau and Grand Wash Cliffs.

Cultural Resources Issue:

One ACEC would be established in this alternative to provide special management and protection for cultural values on the Paria Plateau. Other areas with cultural values would continue to be managed under current practices and operating procedures.

Special Designation Issue:

One ACEC on the Paria Plateau is proposed in this alternative to provide special management for cultural values. Other areas with special resource values (i.e. special status species, riparian areas, and cultural areas) would be managed under existing laws and policies.

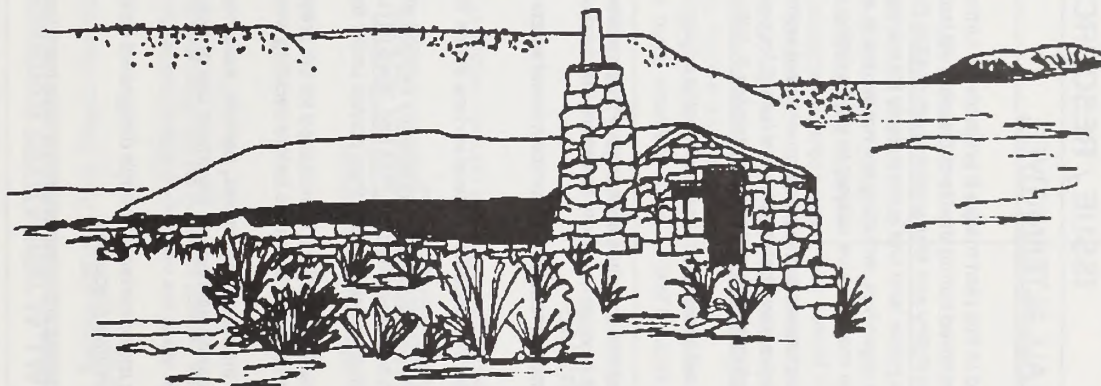


TABLE II - 1
DESCRIPTION OF ALTERNATIVES
ISSUE / RESOURCE: Land Resources

MANAGEMENT GUIDANCE COMMON TO ALL ALTERNATIVES:

- Land Ownership Adjustments: Identification of land in this plan makes it available for further transfer consideration, but does not commit the BLM to its ultimate transfer. It is unlikely that the full amount of land identified would be transferred during the life of the plan. All land identified as suitable for sale in this RMP Environmental Impact Statement (EIS) meets the criterion set forth in Sec. 203(a) of the Federal Land Policy and Management Act of 1976 (FLPMA). It states, in part, that "...such tract because of its location or other characteristics is difficult and uneconomical to manage as part of the public land and is not suitable for management by another federal department or agency." Exchange, sale, or Recreation and Public Purpose Act (R&PP) actions serve important public objectives, including but not limited to, expansion of communities and economic development and which can outweigh other public objectives and values. All transfers are made at fair market value subject to valid existing rights.

- Land can be sold under the R&PP Act to qualified purchasers, such as local government entities, at reduced prices according to BLM Manual 2740. To ensure public purpose development of public land slated for R&PP transfer, the BLM may require that land be first leased for a period of time prior to issuing a patent. Lands may also be considered for sale or grant under other various acts including the Airport and Airway Improvement Act of September 3, 1982.

- Land exchanges will be given priority before sales are considered. Land ownership adjustments are based upon the merits and resource values contained in specific proposals and all exchanges will be in the public interest.

- Land ownership adjustments are also accomplished through state exchange. Private exchanges will be consummated to acquire lands with special public values and to benefit federal management programs. Lands to be acquired will have an inventory to ensure that hazardous materials sites are not exchanged.

- On lands not identified for disposal, BLM would retain all federal subsurface mineral estate and acquire through exchange all non-federal subsurface estate on existing public lands or on lands proposed for acquisition.

- BLM would dispose of all subsurface mineral estate that underlies federal surface estate identified for disposal.

- BLM's ability to sell or exchange land through the RMP/EIS may be constrained by existing withdrawals which segregate against disposal. BLM cannot consider any type of land ownership adjustment on withdrawn land until the segregation has been lifted. FLPMA Sec. 204(k)(1) requires that all withdrawals affecting public land be administratively reviewed by 1991. Land that becomes unencumbered through the withdrawal review process then comes under the guidance of decisions made in this RMP/EIS.

- In addition, any land identified for exchange, sale or R&PP actions is evaluated for the presence of threatened and endangered species, floodplain/flood hazards, riparian areas, water sources, prime and unique farmland, and significant cultural resources before deciding whether or not to transfer the land. Presence of any one of these values can preclude the action.

- Land Use Authorizations: Land use authorizations (rights-of-way, leases, permits, easements) would continue to be issued on a case-by-case basis and in accordance with decisions established in this RMP/EIS and site-specific environmental review. Maximum use of existing right-of-way routes, including joint use whenever possible, would be encouraged. New rights-of-way are not issued in wilderness.

- Utility Corridors: Utilities are directed to route their major systems through designated corridors. This prevents or reduces the proliferation of major utility systems across public land and reduces adverse environmental impacts to sensitive resources.

- Communication Sites: Communication site applications are considered on a case merit basis in accordance with the RMP. Communication site plans are required prior to approval of application on all designated sites.

- Recreation and Public Purposes Act (R&PP): Under the R&PP Act, BLM has the authority to lease public land to governmental or non-profit entities for public parks, building sites, correction centers or for other public purposes. R&PP leases would be issued in accordance with the decisions set forth in this RMP and are processed under the requirements of the National Environmental Policy Act (NEPA).

TABLE II - 1
DESCRIPTION OF ALTERNATIVES
ISSUE / RESOURCE: Land Resources (continued)

MANAGEMENT GUIDANCE COMMON TO ALL ALTERNATIVES (continued):				
<ul style="list-style-type: none"> - Access and Transportation Rights-of-Way (ATROW): Section 205 of FLPMA, Chapter 43 of the Code of Federal Regulations (CFR) Group 2100, and BLM Manual 2100 provide acquisition authority for and regulations and guidance on ATROW. - Easements: Acquisition of easements across private lands are negotiated where needed to accomplish public land resource management programs. Easements are purchased at fair market value. They can either provide access for the general public or for administrative purposes only. Easement acquisition needs are depicted in Appendix 7. 				
<u>EXISTING PLANS AND DECISIONS:</u>				
<ul style="list-style-type: none"> - Designation of the Navajo-McCullough right-of-way utility route as a corridor. - Terminate Public Land Order 3701 (withdrawal for scientific studies of hybrid oak), 154 acres; terminate Boulder Canyon withdrawal (Bureau of Reclamation), 4,709 acres. Revoke 16,000 acres of Virgin River scenic withdrawal which overlaps wilderness areas. - Acquire state and/or private lands by exchange. Exchanges will be the primary method of ownership adjustment. 				
<u>CHANGES IN MANAGEMENT BY ALTERNATIVE:</u>				
Change Agent	Alternative 1 (No Action)	Alternative 2 (Preferred Alternative)	Alternative 3	Alternative 4
- Ownership adjustments	<p>5,000 acres proposed in MFPs. 2,800 acres remaining for exchange or sale.</p> <p>These lands were identified for disposal for agricultural purposes by sale or exchange. Only 2,200 acres were disposed of, all by private exchange.</p>	<p>Make available 4,070 acres for exchange, sale or R&PP. Exchanges would be first priority. Disposals that involve desert tortoise habitat must result in a net affect that is positive or neutral for the tortoise. These same lands plus an additional 13,100 acres would be available for exchange (Appendix 7). All remaining lands would be retained in federal ownership and would be segregated against agricultural land laws, exchanges and sales (Map II-4).</p>	<p>Make available 2,890 acres for exchange or sale. Exchanges would be first priority. Make an additional 12,120 acres available for exchange only. Public lands adjacent to communities and large private or state tracts are available for exchange if shown to be in the public interest (Map II-5).</p> <p>Retain in federal ownership all habitat essential for the survival of the desert tortoise, including historical habitats. Disposals that would jeopardize tortoise would not be allowed.</p>	<p>Make available 11,060 acres for exchange or sale. Exchanges would be first priority. Make an additional 17,840 acres available for exchange only. An additional 6,200 acres would be made available for transfer in the Ferry Swale area (Map II-6).</p> <p>Same as Alternative 2 for desert tortoise concerns.</p>

TABLE II - 1
DESCRIPTION OF ALTERNATIVES

ISSUE / RESOURCE: Land Resources: Changes in Management by Alternative (continued)				
Change Agent	Alternative 1 (No Action)	Alternative 2 (Preferred Alternative)	Alternative 3	Alternative 4
- Acquisitions	<p>Acquire 129,000 acres of state land through exchange. Acquire private inholdings where shown to be in the public interest.</p> <p>Most of these lands are to be acquired in exchange for public lands located in Apache and Navajo counties in the Phoenix District.</p>	<p>Acquire 147,600 acres of state land. Most of these lands are to be acquired by exchange for public lands located in Apache and Navajo counties in the Phoenix District. Acquire 97,000 acres of private land. Acquire subsurface estate where BLM manages surface. Acquire lands with riparian and other high resource values when opportunities occur. Seek opportunities to acquire desert tortoise habitat where it would improve the likelihood of recovery (Appendix 8 and Map II-4).</p> <p>Lands acquired through exchange would be open to operation of all public land laws with the exception of agricultural entry once acquired unless specifically modified by opening order. Management would be in accordance with RMP objectives.</p>	Same as Alternative 2 (Map II-5).	Same as Alternative 2.
- Airports	<p>Process requests as received.</p>	<p>Limit new airports to area A. Administer existing airstrips. Make lands available to expand Colorado City Airport in coordination with city officials, the Arizona Department of Transportation and the Federal Aviation Administration. The City of Page, Arizona, anticipates the need for expanded airport facilities within the next decade. BLM would continue to work with city and county officials, the FAA and other agencies in considering and evaluating possible sites to meet future community needs. (Ferry Swale, identified as a possible airport site, is not included in this alternative because of potentially significant adverse impacts associated with wilderness, rights-of-way, safety and other management considerations).</p>	<p>Close airstrip at Poverty Flat, otherwise same as Alternative 2.</p>	<p>Same as Alternative 2.</p> <p>Make land available to expand Colorado City Airport in coordination with city officials, the Arizona Department of Transportation and the Federal Aviation Administration.</p> <p>An additional 6,200 acres would be made available for transfer in the Ferry Swale area compatible with an airport.</p>

TABLE II - 1
DESCRIPTION OF ALTERNATIVES

ISSUE / RESOURCE: Land Resources: Changes in Management by Alternative (continued)				
Change Agent	Alternative 1 (No Action)	Alternative 2 (Preferred Alternative)	Alternative 3	Alternative 4
- Communication sites	Designate site on Black Rock Mountain.	Do not designate or expand physical facilities on Black Rock Mountain communication site. Establish Seegmiller Mountain area as a communication site. Consider other sites which may be requested on a case-by-case basis. No communication sites in Moccasin Mountains.	Same as Alternative 2, except no communication site on Moccasin Mountain or in the Uinkaret area.	Designate both Black Rock and Seegmiller Mountains as communication sites.
- Withdrawals:	No change.	Conduct review of the FERC withdrawals in Ferry Swale. Consider converting powerline authorizations to rights-of-way.	Same as Alternative 2.	Same as Alternative 1, plus revoke Vermillion Cliffs Natural Area withdrawal and withdraw 1,900 acres in Ferry Swale area for an airport.
- Right-of-Way corridors (width)	Different widths in each resource area. Allow on a case-by-case basis.	Designate the existing Navajo-McCullough right-of-way corridor width 1-mile-wide, except 1/2-mile-wide in Ferry Swale area and confine the width of the right-of-way across the Beaver Dam Slope to the Nevada state line to only that width occupied by the existing powerline and a second yet unbuilt R/W. Drop the description of the existing corridor. Future proposals for powerlines would be considered on a case-by-case basis across the Beaver Dam Slope which addresses impacts to desert tortoise. Designate a 1-mile right-of-way planning corridor across Arizona Strip via Lime Kiln/Rosy Canyon route. Rosy Canyon width is confined to the valley bottom. Stipulations necessary to improve habitat conditions for tortoise will be included (Map II-4). Where feasible, place linear rights-of-way underground along existing roads in the following areas: Paria Plateau, Parashant, Uinkarets, and House Rock Valley. Exclude permanent rights-of-ways from Grama and Kanab Canyons, Moccasin Mountain and Marble Canyon.	Same as Alternative 2 (Map II-5).	Same as Alternative 2, plus allow proposals outside of corridor locations on a case-by-case basis.

TABLE II - 1

DESCRIPTION OF ALTERNATIVES

ISSUE / RESOURCE: Land Resources: Changes in Management by Alternative (continued)				
Change Agent	Alternative 1 (No Action)	Alternative 2 (Preferred Alternative)	Alternative 3	Alternative 4
- Leases	Lease 25 acres of agriculture lands.	Continue lease of 12 acres of agriculture land. Continue lease of 13 additional acres along Beaver Dam Wash only if compensation for tortoise is included north of I-15.	Discontinue agriculture land leases and reclaim to near natural condition.	Same as Alternative 2, and consider leasing additional lands on a case-by-case basis.
- Agricultural entry	Lands legally open to entry, but practically closed due to water proof requirements.	Close all public lands to agricultural entry.	Same as Alternative 2.	Same as Alternative 1.

ISSUE / RESOURCE: Mineral Resources

MANAGEMENT GUIDANCE COMMON TO ALL ALTERNATIVES:

Mineral exploration and development is encouraged on public land in keeping with the bureau's multiple-use concept. Overall guidance on the management of mineral resources appears in the Mining and Minerals Policy Act of 1970, Sec. 102(a)(12) of FLPMA, National Materials and Minerals Policy, Research and Development Act of 1980, BLM's Mineral Resources Policy of May 29, 1984, and the Endangered Species Act as Amended, 1988.

- Leasable Minerals: The Mineral Leasing Act of 1920, Geothermal Steam Act of 1970, and 43 CFR 3100 through 3500 provide the legal and regulatory framework for the issuance and management of mineral leases. These regulations apply where public interest exists for the development of oil, gas, geothermal, coal and non-energy leasable mineral resources. Stipulations are attached to leases and permits in order to assure protection of non-mineral resources that are susceptible to impacts resulting from the exploration and development of leasable mineral resources.

- Locatable Minerals: Exploration for and development of locatable mineral resources are provided for by general mining laws of 1872. 43 CFR 3809 provides for mineral exploration and development while assuring that activities are conducted in a manner that prevents unnecessary or undue degradation, provides protection to non-mineral resources, and provides for reclamation of disturbed areas.

- Salable Minerals: The Materials Sale Act of 1947 and 43 CFR 3600 provide for the disposal and regulation of mineral materials. Disposal is administered on a case-by-case basis. Salable minerals are sold at fair market values. Free use permits are issued to federal and state agencies, local communities, and non-profit groups as the need arises.

EXISTING PLANS AND DECISIONS:

- Allow entire unit to remain open to mineral leasing, location, and sale except where restricted by wilderness designation and withdrawals, etc.
- Provide the communities in or near the area with sand and gravel needed for development in a timely and orderly manner consistent with environmental considerations.

CHANGES IN MANAGEMENT BY ALTERNATIVE:

Change Agent	Alternative 1 (No Action)	Alternative 2 (Preferred Alternative)	Alternative 3	Alternative 4
- Leasing categories (O&G)	154 acres in Turbinella-Gambel Oak protective withdrawal and 265,600 acres in wilderness closed to leasing. Remaining acres open to leases subject to standard lease terms and conditions (Appendix 9).	2,790,800 acres open to lease subject to standard lease terms and conditions, 269,900 acres open to lease subject to seasonal restrictions to protect important seasonal habitat for peregrine falcon, desert tortoise, and bighorn.	2,505,100 acres open to lease subject to standard lease terms and conditions, 269,900 acres open to lease subject to seasonal restrictions to protect important seasonal habitat for peregrine falcon and bighorn.	2,945,100 acres open to lease subject to standard lease terms and conditions, 250,100 acres open to lease subject to seasonal restrictions to protect important seasonal habitat for peregrine falcon and desert tortoise.

TABLE II - 1
DESCRIPTION OF ALTERNATIVES

ISSUE / RESOURCE: Mineral Resources: Changes in Management by Alternative (continued)				
Change Agent	Alternative 1 (No Action)	Alternative 2 (Preferred Alternative)	Alternative 3	Alternative 4
- Leasing Categories (O&G) (cont.)		and bighorn sheep, 137,800 acres open to lease subject to the no surface occupancy stipulations to protect important visual resources (Map II-7 and Appendix 10).	sheep, 423,500 acres open to lease subject to the no surface occupancy stipulation to protect visual resources and desert tortoise (Map II-8 and Appendix 11).	3,300 acres open to lease subject to the no surface occupancy stipulations to protect the Virgin River Scenic Withdrawal (Map II-9 and Appendix 12).
- Mining Law	2,492,200 acres open to exploration and development subject to surface management regulations. 323,900 acres in wilderness, scenic withdrawal, Vermillion Cliffs Natural Area and Grand Canyon Game Preserve are closed to mineral location.	297,600 acres closed to mineral entry. Special stipulations would be added to exploration and development plans to maintain unique features and/or remoteness in the B areas (Map II-1). These stipulations would address site-specific needs.	545,000 acres closed to mineral entry. Special stipulations would be added to exploration and development plans to maintain unique features and/or remoteness in the B areas (Map II-2). These stipulations would address site-specific needs.	303,000 acres closed to mineral entry. Special stipulations would be added to exploration and development plans to maintain unique features and/or remoteness in the B areas (Map II-3). These stipulations would address site-specific needs.
- Material disposal	265,600 acres in wilderness and scenic withdrawals are closed to mineral material disposal. The remainder is open to disposal of mineral materials on a case-by-case basis with consideration of travel influence zones.	Manage all material sites in conformance with area A or B guidelines, as appropriate for each site. Some special designation areas closed to mineral material disposals.	Same as Alternative 2.	Same as Alternative 2, except most special designation areas open to mineral material disposals.

ISSUE / RESOURCE: Cultural Resources

MANAGEMENT GUIDANCE COMMON TO ALL ALTERNATIVES:

Cultural resource protection and management on public lands are covered by an array of laws and regulations. Two of the most important laws are the National Historic Preservation Act (NHPA) of 1966, as amended, and the Archaeological Resources Protection Act (ARPA) of 1979, as amended. Under NHPA, potential impacts to National Register and National Register-eligible properties are identified and measures to avoid or mitigate those impacts are developed in consultation with the Arizona State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation. ARPA prohibits the attempt or actual excavation, removal, damage or trafficking of archaeological resources from public land by unauthorized persons. This act also requires the Secretary of the Interior to develop plans to determine the nature and extent of archaeological resources and schedule land surveys in areas that likely contain the most scientifically valuable archaeological resources. Since 1985, BLM in Arizona has operated under terms of a general compliance programmatic memorandum of agreement with the state, which guides inventory and data recovery procedures for sites on all public land, and a specific memorandum of agreement addressing the protection of cultural resources in BLM-state land exchanges.

Cultural resource management programs include participation of both professional and amateur archaeologists. Cooperative agreements currently exist for research and excavation with Brigham Young University (BYU). Volunteer agreements with members of American Rock Art Research Association (ARARA), the Dixie Chapter of the Utah Statewide Archaeological Society (USAS), the Mohave Chapter of Arizona Archaeological Society (AAS), and other individuals have increased cultural resource inventories and encourage growth of cultural programs.

It is policy that any surface-disturbing activity on public lands be reviewed by a cultural resource specialist. Cultural reviews identify results of previous inventories and evaluate the probability of cultural resource occurrence in the project area. A cultural resource inventory is then conducted. Should significant cultural resources be found as a result of the inventory, impacts to them would be mitigated through avoidance. Should it be determined that the cultural resource values cannot be avoided by the proposed activity, the cultural resource values would be evaluated for National Register eligibility. If the values are found to be eligible, a program of mitigation would be developed through consultation between the BLM, the State Historic Preservation Officer and the Advisory Council in accordance with the National Historic Preservation Act of 1966 and 36 CFR 800. Responsibility for inventory and evaluation of approved mitigation to cultural resources rests with the BLM. Through this process, all cultural resource values of National Register quality would be protected or impacts to them mitigated.

TABLE II - 1
DESCRIPTION OF ALTERNATIVES

ISSUE / RESOURCE: Cultural Resources: Management Guidance Common To All Alternatives (continued)				
<p>Priority and important cultural resource areas are patrolled by the Arizona Strip District ranger. Preliminary patrol plans exist for seven priority areas and a cooperative agreement with Civil Air Patrol has enhanced monitoring of cultural resources on the district.</p> <p><u>EXISTING PLANS AND DECISIONS:</u></p> <ul style="list-style-type: none"> - The Paria Plateau Patrol Plan provides guidance and coordination for protecting cultural resources. - Little Black Mountain Cultural Resource Project Plan (CRPP) provides direction and plans for interpretation of the area for public values. <p><u>OBJECTIVES:</u></p> <p>Cultural resource management objectives in the RMP area are to protect the scientific information potential, enhance the public use values of sites or to manage them, when applicable, for conservation. Cultural resource management plans (CRMPs) will be developed for specific sites or areas having special significance or values. The guidelines for management under each objective are found in Appendix 13.</p>				
CHANGES IN MANAGEMENT BY ALTERNATIVE:				
Change Agent	Alternative 1 (No Action)	Alternative 2 (Preferred Alternative)	Alternative 3	Alternative 4
- Designations	Designate 38,000 acres on the Paria Plateau as an interpretive area.	Designate 227,000 acres on the Paria Plateau as a SRMA. Designate 9,800 acres on Lost Spring Mountain, 5,500 acres at Moonshine Ridge, 2,400 acres at Johnson Spring, 260 acres at Witch Pool, 550 acres at Nam-pawoop, and 200 acres at Little Black Mountain as ACECs to preserve their cultural values (Map II-10). (Note: Lost Spring Mountain, Moonshine Ridge and Johnson Spring ACECs also contain the endangered <i>Pedio-cactus sileri</i> .	Designate 186,600 acres on Paria Plateau as an ACEC (Map II-11). Designate other cultural ACECs same as Alternative 2.	Designate 77,000 acres on Paria Plateau as a cultural ACEC (Map II-12).
- Management direction	No change.	Initiate class II inventory and develop CRPPs for areas designated. Classify and manage cultural resources in the RMP area for their Information Potential, Conservation and Public Values. See Appendix 13 for a complete description of these management objectives.	Same as Alternative 2.	Same as Alternative 2.

TABLE II - 1
DESCRIPTION OF ALTERNATIVES

ISSUE / RESOURCE: Cultural Resources				
Change Agent	Alternative 1 (No Action)	Alternative 2 (Preferred Alternative)	Alternative 3	Alternative 4
- Management direction		<p>Manage most sites for their information potential to be used for scientific research and management studies.</p> <p>Manage approximately 35 known sites located in each of the ACECs and from selected geographic regions for "Conservation". These sites have overriding scientific importance and are preserved for future research.</p> <p>Manage Little Black Mountain, West Bench Pueblo, Uinkaret Pueblo, Paiute Cave, Pinenut and Paria Canyon and the Honeymoon Trail, Temple Trail and Dominguez & Escalante Trail for "Public Values". These sites would be made available for public involvement in research, interpretation, and tours.</p>		

ISSUE/RESOURCE: Watershed (Soil, Water, Air) Resources

MANAGEMENT GUIDANCE COMMON TO ALL ALTERNATIVES:

There are several laws providing authority for management of soil, water and air activities on public land.

FLPMA of 1976 requires that public lands be managed in a manner that protects scientific, environmental, air and atmospheric, and water resource values. It also requires land use plans to be in compliance with applicable pollution control laws, including state and federal air, water or other pollution standards.

The laws that FLMPA requires compliance with are: the Soil Conservation and Domestic Allotment Act of 1935; The Watershed Protection and Flood Control Act of 1954; the Colorado River Basin Salinity Control Act of 1974; Wild and Scenic Rivers Act of 1968; the Federal Pollution Control Act with Amendments of 1972; Water Quality Act of 1987; and the Safe Drinking Water Act of 1977. The Clean Air Act of 1970 governs air quality. BLM Manual 7000 and several executive orders provide field guidance in management of soil, water, and air activities.

Watershed: Watershed conditions and soil salinity problems have been managed primarily through three separate systems:

1. The management and development of public lands through grazing AMPs and vegetation monitoring. Currently 70 AMPs have been implemented. AMPs establish grazing systems and vegetative standards to improve runoff/erosion rates.
2. The environmental assessment (EA) review process helps assure that all surface-disturbing proposals are evaluated and, where appropriate, mitigated to maintain or enhance watershed conditions.

TABLE II - 1
DESCRIPTION OF ALTERNATIVES
ISSUE/RESOURCE: Watershed (Soil, Water, Air) Resources (continued)

<p>3. Watershed activity plans are written to assess areas where moderate to critical erosion conditions are prevalent and more attention is needed than what is provided through the AMP process. Two watershed activity plans currently exist: Fort Pierce and Upper Lang's Run. All watershed areas have been evaluated and put into one of four categories as described in Table III-12, Maps II-13, II-14 and II-15, and Appendix 14. The objectives for each category is stated below:</p>	<p>a. Category I - These areas are in satisfactory condition and have a low vulnerability to accelerated erosion. The objective is to maintain current land use and vegetative cover (808,000 acres).</p> <p>b. Category II - These areas are in satisfactory condition and overall erosion is slight but are susceptible to accelerated erosion. The objective is to maintain or enhance vegetative cover and to monitor the area to identify the onset of localized erosional problems on fragile or saline soils. All surface disturbance proposals will be evaluated for their impacts to salt loading in localized drainages (1,226,000 acres).</p> <p>c. Category III - These areas are not in satisfactory condition, have critical erosion problems, and have no reasonable potential for improvement. There are only very few localized areas on the district. The objective is to not allow these areas to expand by developing special management plans for protection.</p> <p>d. Category IV - These areas are not in satisfactory condition, have moderate to severe erosion problems, and do have potential for improvement. The objective is to improve vegetative ground cover through grazing management or land treatments. Develop and/or maintain activity plans for these areas as a priority. Evaluate and mitigate impacts to active water sources as a priority (1,188,000 acres).</p>
	<p><u>Floodplain Management:</u> Executive Order 11988 directs federal agencies to "avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development whenever there is a practicable alternative" (<u>Floodplain Management Guidelines</u>, 43 CFR 6030, 1978). It is bureau policy to retain and/or protect base (100-year) floodplains.</p>
	<p><u>Water Resources:</u> The water resource program is divided into the following sections: Water Inventory, Water Rights and Water Quality.</p>
<p>1. <u>Water Inventory</u> - It is policy to inventory all water sources on public lands administered by BLM and to document and store this data in the bureau's Water Data Management System. The district has nearly completed the inventory and is in the process of incorporating the data into the data base. Our objective is to complete the data base and keep it up-to-date and accurate, giving priority to instream flow for the Virgin River and obtaining flow data for various springs identified in the wilderness management plans. Riparian areas have been inventoried only for general condition as they relate to the water source inventory.</p>	<p>2. <u>Water Rights</u> - It is policy to file water rights on all water sources in accordance with State of Arizona Water Laws. BLM will file, as appropriate, for recreational use, wildlife (including fish), livestock and administrative uses.</p>
<p>3. <u>Water Quality</u> - Our water quality baseline data is limited (Chapter III). One of our objectives is to establish a good baseline water quality data base using the USGS STORET system giving priority to riparian areas, recreational and wilderness human use water sources. To ensure that all waters on public land meet or exceed established federal and state water quality standards for specific uses and to mitigate activities to prevent water quality degradation. Chemical water analysis is done on wells and springs for baseline resource information. Generally, BLM manages non-point sources of pollution, as addressed in Section 319 of Water Quality Act of 1987 (P.L. 100-4). The Arizona Department of Environmental Quality is the designated agency for assessing, managing and certifying non-point source pollution control program on public lands in Arizona. These agencies assess nonpoint sources of pollution and prepare water quality management plans described as Best Management Practices (BMPs). BMPs are coordinated with BLM management plans. The Arizona Department of Environmental Quality reports water quality status to the EPA annually. BLM inventories and watershed activity plans are coordinated with the State of Arizona. Impacts to water quality are prevented or reduced through the application of specific mitigative measures identified in project planning and NEPA review.</p>	<p><u>Air Resources:</u> Impacts to air quality resulting from activities on public land are prevented or reduced through mitigation brought forward in NEPA review of proposed projects. Typically, activities on public land which might affect air quality are addressed by Article 4 (R9-3) of the Arizona Rules and Regulations. Prescribed burning, road construction, permitting the construction of mineral tailings piles and allowing dust emissions from vehicles passing over unsurfaced roads are all specifically addressed in the regulations. The NEPA review processes are designed to ensure compliance with these regulations. For identification and coordination purposes, the BLM refers to the State Implementation Plan goals for air quality nonattainment areas.</p>

TABLE II - 1
DESCRIPTION OF ALTERNATIVES
ISSUE/RESOURCE: Watershed (Soil, Water, Air) Resources (continued)

ISSUE/RESOURCE: Watershed (Soil, Water, Air) Resources (continued)				
<u>EXISTING PLANS AND DECISIONS:</u>				
<p>Watershed: Continue to implement existing watershed activity plans: Fort Pierce and Upper Lang's Run. Continue to implement and develop AMPs that improve watershed conditions.</p> <p>Water Resources: Improve water quality, water yield and reduce erosion around springs.</p> <p>Air Resources: Manage to prevent degradation of Class I Federal Air Quality standards in National Parks. Maintain Class II Air Quality standards and State Air Quality standards on public lands. Manage smoke on prescribed burns through smoke management procedures.</p>				
<u>CHANGES IN MANAGEMENT BY ALTERNATIVE:</u>				
Change Agent	Alternative 1 (No Action)	Alternative 2 (Preferred Alternative)	Alternative 3	Alternative 4
<u>WATERSHED</u> - Designations - Management direction	None	Designate Fort Pierce ACEC, Mt. Trumbull RCA and the Canyons and Plateaus of the Paria SRMA to improve watershed conditions.	Same as Alternative 2, except expand Fort Pierce ACEC acreages and use management prescription described in Table II-2.	Same as Alternative 1.
	Continue implementation of the watershed plan for Upper Lang's Run and maintain Fort Pierce Wash watershed projects. Coordinate watershed and riparian objectives into appropriate AMPs with emphasis on areas of moderate to severe erosion.	Same as Alternative 1, but develop and implement watershed activity plans for the following areas in accordance with shown priority. 1. Fort Pierce Wash, 2. Wolf Hole Valley, 3. Johnson Run, 4. Hobbie Canyon, 5. Lower Hurricane Valley 6. Upper Bull Rush Wash.	Same as Alternative 2.	Same as Alternative 1.
<u>WATER RESOURCES</u> - Management direction	Conduct an instream flow study for the Virgin River.	Same as Alternative 1.	Same as Alternative 1, plus conduct instream flow study for Paria River.	Same as Alternative 1.
	Inventory water sources and incorporate into water data management system. File for water rights as appropriate under state law. Improve and protect quality and condition of water resources.	Same as Alternative 1, except increase inventory on riparian management which includes studying water quality, stream bank conditions, channel dynamics, geomorphic relationships, season flow fluctuations, etc.	Same as Alternative 2.	Same as Alternative 1.

TABLE II - 1
DESCRIPTION OF ALTERNATIVES
ISSUE/RESOURCE: Special Status Species

MANAGEMENT GUIDANCE COMMON TO ALL ALTERNATIVES:

The Endangered Species Act (ESA) of 1973, as amended, is the authority to conserve endangered and threatened species on public lands. Section 4(f) of the ESA directs the Secretary of the Interior to develop and implement recovery plans for the conservation and survival of endangered species. Section 7 of the ESA states, "Each federal agency shall, in consultation with and with the assistance of the Secretary, insure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of habitat of such species which is determined...to be critical..."

Any actions authorized, funded or carried out by a federal agency which may affect listed or proposed species are reviewed in cooperation with USFWS.

The bureau policy for special status candidate species is contained in BLM Manual Section 6840. BLM shall carry out management consistent with multiple use for conservation of candidate species and their habitats and shall ensure that actions authorized, funded, or carried out do not contribute to the need to list any of these species as threatened or endangered (T&E). It is also policy to collect systematically gathered data on candidate species to determine whether there exists a need to list the species. Special status species are listed in Appendices 15 and 16.

State-listed animal species are managed in cooperation with the AGFD under provisions of the Sikes Act of 1974 as amended. It is policy that any surface-disturbing activity on public lands receive a special status species review by a qualified specialist. The review is to determine the results of previous inventories and the probability of special status species in the project area. The USFWS provides information on federal listed and candidate species. If it is determined that special status species have a probability for occurrence in the project area, an evaluation would be made as to the impact on the species. Should special status species be found in the project area, the bureau's priority would avoid any impacts. If the proposed activity may affect threatened or endangered species, the USFWS would be consulted. In compliance with the Endangered Species Act, proposals which would jeopardize listed species (such as desert tortoise) would not be authorized, funded or conducted.

Potential impacts to species are analyzed in an environmental review by BLM for each project and protection measures may be stipulated in the record of decision in the environmental assessment and/or the biological opinion prepared by USFWS. Special status species areas received surveillance by the Arizona Strip District ranger.

EXISTING PLANS AND DECISIONS:

Since the completion of the MFPs, two habitat management plans (HMPs) have been completed in response to the recovery plans done for Siler pincushion and Brady pincushion cactus. These plans were coordinated with the U.S. Fish and Wildlife Service (USFWS), Arizona Game and Fish Department (AGFD), Arizona Commission of Agriculture and Horticulture, and The Arizona Nature Conservancy. The plans are being implemented.

Management of special status animals is specifically guided by recovery plans and the Virgin River-Pakoon Basin HMP and generally by the six HMPs (Appendices 17 and 18). The HMPs for special status species and wildlife are monitored and evaluated on a periodic basis to determine if the objectives are being met. Based on the evaluation, HMPs are modified/revised to meet changing situations or needs. The appropriate plans also address management of the listed Virgin River roundtail chub and the endangered desert tortoise. Guidance is also provided by the Rangewide Plan for Management of the Desert Tortoise on the Public Lands.

Continued Existing MFP Decisions are:

- Inventory potential raptor habitat.
- Restrict bureau permitted activities within known, occupied nesting areas of endangered or threatened raptors
- Protect desert tortoise habitat from man-caused destructive actions.

TABLE II - 1
DESCRIPTION OF ALTERNATIVES
ISSUE/RESOURCE: Special Status Species (continued)

ISSUE/RESOURCE: Special Status Species (continued)				
OBJECTIVES:				
<ul style="list-style-type: none"> - To ensure actions authorized on BLM-administered lands do not contribute to the need to list any other special status species under ESA provisions. - To conserve threatened and endangered species and the ecosystems on which they depend and; - To delist through conservation of existing habitats and populations. 				
CHANGES IN MANAGEMENT BY ALTERNATIVE:				
Change Agent	Alternative 1 (No Action)	Alternative 2 (Preferred Alternative)	Alternative 3	Alternative 4
- Designations: <u>Plants</u>	No ACEC designations.	Designate 10,700 acres of Brady pincushion cactus habitat and 4,200 acres of Siler pincushion cactus habitat as ACECs. (Note: The Siler cactus habitat within Johnson Spring, Lost Spring Mountain and Moonshine Ridge ACECs occurs in conjunction with cultural resources. Siler cactus habitat occurs in association with fragile soils in the Fort Pierce ACEC.) (Map II-10.)	Designate 15,500 acres of Brady pincushion cactus habitat and 6,014 acres of Siler pincushion cactus habitat as ACECs (Map II-11). Intensify management of special status species within these areas as described in Table II-2. Allow no surface disturbance within the Marble Canyon, Johnson Spring, Lost Spring Mountain, or Moonshine Ridge ACECs. Minimize adverse impacts to fragile soils and avoid impacts to <i>Pedofocactus sileri</i> within the Fort Pierce ACEC.	Same as Alternative 1:
<u>Animals</u>	No ACEC designations.	Designate 20,800 acres as Beaver Dam desert tortoise ACEC and 8,100 acres as Virgin River ACEC (Map II-10). Intensify management of sensitive and endangered species within the areas as described in Table II-2 consistent with recovery needs, Desert Tortoise Rangewide Plan, and the <u>Endangered Species Act</u> . Designate and manage desert tortoise habitat as follows: 38,700 acres in Category I, 61,350 acres in Category II, 213,140 acres in Category III (Map II-16 and Appendix 19).	Designate the same acreage as ACECs (Map II-11) as Alternative 2. Intensify management of special status species within these areas as described in Table II-2 consistent with recovery needs and the Endangered Species Act. Categories same as Alternative 2.	Same as Alternative 2, except do not designate as a desert tortoise ACEC. Categories same as Alternative 2.

TABLE II - 1
DESCRIPTION OF ALTERNATIVES

ISSUE/RESOURCE: Special Status Species (continued)				
Change Agent	Alternative 1 (No Action)	Alternative 2 (Preferred Alternative)	Alternative 3	Alternative 4
-Management direction	Activities that could occur within one mile of an active peregrine eyrie, or "historic" or "superior" nesting habitat (Map 17; Ellis, 1979), during the March 1-August 1 period (USFWS, July 19, 1984), may not be allowed if its determined by the BLM that the peregrine would be negatively impacted. The one-mile buffer merely indicates the point at which a thorough impact evaluation, considering topographic and other factors, is initiated, before proceeding with authorization of the project.	Same as Alternative 1, plus activities which could adversely affect the desert tortoise during their active season within the Beaver Dam ACEC may be limited to the period between November 1 and February 15. Standards for compensation from proposed actions in desert tortoise habitat will be developed consistent with those used effectively elsewhere.	Same as Alternative 2.	Same as Alternative 2.
ISSUE/RESOURCE: Riparian Areas				
MANAGEMENT GUIDANCE COMMON TO ALL ALTERNATIVES:				
<p>The authority for riparian area management comes through several laws: <u>Taylor Grazing Act</u> (TGA) of 1934, <u>FLPMA</u> of 1976, <u>PRIA</u> of 1978, <u>Emergency Wildlands Resources Act</u> of 1986, and <u>Executive Orders</u> 11988 and 11990 dealing with floodplains and wetlands. The bureau's <u>Riparian Management Policy</u> (January 22, 1987) and <u>Arizona's Riparian Area Management Policy</u> (July 1, 1988) specify the bureau's riparian habitat management policy.</p> <p>It is policy that all ongoing or proposed uses of the public lands are managed to ensure protection of riparian areas. Every activity associated with the use or disturbance of these unique ecological zones will receive protective management and/or mitigation.</p> <p>Management direction for all alternatives include:</p> <ol style="list-style-type: none"> 1. Identify riparian areas and assign priorities for management; 2. Continue inventory of riparian areas to determine present condition and potential; 3. Implement management of riparian areas and their resources to maintain, improve, or restore riparian ecosystems, and eliminate or mitigate conflicts. Ensure support by all affected resource management programs; 4. Monitor important characteristics to assess significant changes and trends in condition; 5. Retain significant riparian areas in public ownership and acquire significant new riparian areas where needed to ensure the integrity of public riparian ecosystems and their dependent resources; 6. Coordinate with other federal and state agencies and interested user groups to ensure the development of top quality management practices; and 7. Explore research opportunities in cooperation with university or federal researchers to improve riparian management. 				

TABLE II - 1

DESCRIPTION OF ALTERNATIVES

ISSUE/RESOURCE: Riparian Areas (continued)

EXISTING PLANS AND DECISIONS:

Important riparian areas have been addressed in allotment and habitat management plans. Changes in grazing use and systems and exclusion of livestock by fencing have been implemented. Through the normal AMP/HMP monitoring and evaluation process, revisions are made to implement the riparian area policy. Previous MFP decisions to improve and maintain aquatic and riparian habitat through intensive management and fencing where necessary will continue.

OBJECTIVES:

The objective of riparian area management is to maintain, restore, or improve riparian areas to achieve a healthy and productive ecological condition for maximum long-term benefits.

CHANGES IN MANAGEMENT BY ALTERNATIVE:

Change Agent	Alternative 1 (No Action)	Alternative 2 (Preferred Alternative)	Alternative 3	Alternative 4
- Designations	No designations.	Designate Virgin River bottomlands from Utah state line to the Nevada state line as a riparian ACEC. (Table II-2 outlines management prescriptions for ACECs.)	Same as Alternative 2, plus designate the Beaver Dam/Virgin River confluence area as a riparian demonstration area and manage the 120 acres under a riparian demonstration plan.	Same as Alternative 1.

ISSUE/RESOURCE: Forest/Woodland Resources

MANAGEMENT GUIDANCE COMMON TO ALL ALTERNATIVES:

The forest lands in the RMP area are managed as set forth in FLPMA under the principle of multiple-use and sustained yield without permanent impairment of the productivity of the land and the quality of the environment. The amended Material Disposal Act of 1947 provides authority to dispose of forest products. BLM Manuals 1601-1608 and 5000 provide guidance in forest management. Surface-disturbing activities would be subject to clearance and compliance with the National Historic Preservation Act and Endangered Species Act (cultural resources and special status species sections describe the compliance process).

EXISTING PLANS AND DECISIONS:

The MFPs provide for harvest of woodland products (e.g. fuelwood, fence posts) by sale to private and commercial operators at fair market value.

OBJECTIVES:

- Ensure that ponderosa pine forests and woodlands are well-managed and maintained as healthy, productive ecosystems in perpetuity to fulfill multiple-use needs and objectives and the potential for sustained yield.
- Achieve and maintain optimum growth of ponderosa pine, thereby maintaining the health and vigor of the stands.

TABLE II - 1
DESCRIPTION OF ALTERNATIVES
ISSUE/RESOURCE: Forest/Woodland Resources (continued)

<p>- Protect the forest from catastrophic fires while, as appropriate, managing prescribed burns or naturally-occurring fires within established prescriptions to reduce fuel buildup, maintain healthy species composition and benefit wildlife habitat, watershed cover and livestock forage.</p> <p>- Protect ponderosa pine stands from serious insect and disease infestations.</p> <p>- Maintain appropriate old growth and dead standing ponderosa pine and a healthy understory of vegetation (oak and other species) for wildlife habitat and natural aesthetics.</p> <p>- In forest management activities, ensure protection of natural aesthetics, recreation, special status species, and cultural resource values.</p> <p>- Improve the visual appearance of the edges of the old chainings in the Parashant area.</p>				
CHANGES IN MANAGEMENT BY ALTERNATIVE:				
Change Agent	Alternative 1 (No Action)	Alternative 2 (Preferred Alternative)	Alternative 3	Alternative 4
WOODLANDS - Designations	21,780 acres are designated as fuelwood cutting areas. Entire district except wilderness areas are open to Christmas tree harvest with permits (Map II-18).	Designate personal/commercial green and dead and down woodcutting areas (within 312,000 acres, Map II-19), except the dead and down wood is permitted in the Shivwits Resource Area. Christmas tree cutting is open everywhere but wilderness areas.	Similar to Alternative 2, except Christmas tree cutting is not allowed on Paria Plateau and the acres available for designating cutting areas is less (286,000 acres, Map II-20).	Designate green wood cutting areas within 285,500 acres (Map II-21). The entire district is open to dead and down wood cutting.
- Management direction	Permits issued for dead and down wood districtwide. Permit issuance for green cutting areas, areas signed, and wood cutting is monitored. Wood gathering for camping use is allowed everywhere.	<p>Green woodcutting areas would be marked and permittees directed to areas managed in accordance with woodland management plans. Woodcutting for camping use is allowed everywhere, except no chainsaws in wilderness areas.</p> <p>Dead and down wood cutting is permitted in the designated Vermillion R.A. wood cutting areas and it is open area-wide in the Shivwits R.A.</p> <p>Sell up to 500 Christmas trees annually in the Shivwits personal use area on a first come basis. Sell up to 7,000 trees in the Shivwits commercial use area to either commercial or personal use on a first come basis.</p>	Same as Alternative 2.	Same as Alternative 2.

TABLE II - 1
DESCRIPTION OF ALTERNATIVES

ISSUE/RESOURCE: Forest/Woodland Resources (continued)				
Change Agent	Alternative 1 (No Action)	Alternative 2 (Preferred Alternative)	Alternative 3	Alternative 4
<u>FORESTS</u> - Designations	None	Designate 15,200 acres of ponderosa forest on Uinkaret, Parashant, and Black Rock Mountains in Management Category C. These are areas of "forest management for the enhancement of other uses".	Same as Alternative 2.	Designate 14,100 acres of ponderosa forest on the Uinkaret Mountains and the Parashant in Management Category B, which are forest lands available for restricted management for forest products. Black Rock Mountain (1,100 acres) would be designated as a Management Category C area. Same as Alternative 2.
-Management direction	Management is focused on maintenance of existing forest stands, primarily through fire control.	Management direction would be focused on natural aesthetics, recreation resource values, wildlife habitat requirements, livestock grazing needs and watershed protection. Management practices could include carefully designed and administered selective thinning, disease control, prescribed burns, prescribed management of naturally-occurring fires and reduction of ground fire fuel buildup.	Same as Alternative 2.	Management direction would be to maintain a viable productive forest that would meet the long-term needs of wildlife, recreation, timber harvest, livestock and watershed concerns. Management would also be designed to reduce fire fuel buildup. Management practices could include thinning, selective timber harvest, temporary road improvement and disease control. Maintain a continuous canopy using the sheltered-harvest method for even-aged stands or the selection method for uneven-aged stands. Natural reforestation is planned. Allow a preliminary cut, harvesting intermediate and suppressed trees and enough co-dominants to maintain 14- to 16-foot spacing on residual trees. Reduce the stand basal area to stimulate seed production. Seed trees may be removed after adequate regeneration. On poorer sites, use selective cutting to maintain the uneven-aged character of the stand.

TABLE II - 1
DESCRIPTION OF ALTERNATIVES
ISSUE/RESOURCE: Grazing Management

MANAGEMENT GUIDANCE COMMON TO ALL ALTERNATIVES:				
<p>The grazing program in the RMP area is managed under provisions of the Taylor Grazing Act of 1934 (TGA), the Federal Land Policy and Management Act of 1976 (FLPMA), the Public Rangelands Improvement Act of 1978 (PRIA) and 43 CFR Part 4100. These acts provide authorization for the issuance of grazing licenses, unauthorized use detection and abatement, use supervision, livestock grazing management, range improvement facilities, land treatments, use of pesticides, and other actions.</p> <p>Management of rangeland resources in the district is guided by the completed Vermillion (1979) and Shiwits (1980) Grazing Environmental Statements (ESs), the Shiwits and Vermillion Management Framework Plans, the Arizona Strip Monitoring Plan (1981), grazing use decisions for each allotment issued in 1980 and 1981, and 70 implemented allotment management plans (AMPs).</p> <p>All grazing allotments in the district have been assigned to one of three management categories on the basis of present resource condition and management needs, range potential, conflicts with other resource values and potential for improvement. Appendix 3 depicts allotment categorization criteria.</p> <p>Categorization establishes priorities for distributing rangeland management funds and achieve cost-effective improvement of rangeland conditions and production. The three categories are: "M"—Maintain, "I"—Improve and "C"—Custodial. The "M" category allotments are managed to maintain existing satisfactory conditions, "I" allotments are managed to improve unsatisfactory conditions and "C" allotments receive custodial management to prevent resource deterioration. Efforts are concentrated in allotments where monitoring and evaluation indicate that grazing management actions are needed to improve the basic resource or to resolve serious resource-use conflicts. Allotments are recategorized as management needs or objectives are accomplished and conditions change.</p> <p>The 1987 Rangeland Program Summary Update (available at the Arizona Strip District Office) gives current status on AMP implementation, grazing use levels, grazing system compliance, vegetation trend, expenditures of range improvement funds, and areas where future efforts would be directed. Appendix 2 shows rangeland trend data. Appendix 1 shows current and proposed management by management category and allotment. Present management guidelines and direction (which include monitoring, allotment evaluation and RMP revisions) are considered adequate.</p>				
EXISTING PLANS AND DECISIONS:				
<ul style="list-style-type: none"> - Manage rangelands in accordance with the Shiwits and Vermillion grazing environmental statements and allotment management plans (AMPs) which specify grazing systems, management facilities and land treatments. Revise AMPs to reflect any needed changes as determined through monitoring studies and allotment evaluations. Vegetative treatment projects are implemented where plant cover or soil productivity is being lost, to achieve a desired plant community or to meet activity plan objectives. Practices used to accomplish this include mechanical treatments (chaining), herbicide applications, prescribed fire, reseeding and construction of control structures. Use of pesticides are also prescribed to control insects such as grasshoppers, crickets, etc. - Limit fence construction to the minimum necessary. 				
CHANGES IN MANAGEMENT BY ALTERNATIVE:				
Change Agent	Alternative 1 (No Action)	Alternative 2 (Preferred Alternative)	Alternative 3	Alternative 4
- Management direction	None	Continue present grazing objectives districtwide except the Parashant, where grazing would be managed as an important use in the proposed Resource Conservation Area (RCA).	Same as Alternative 2, except the Parashant area would not be designated as a RCA.	Same as Alternative 3.

TABLE II - 1
DESCRIPTION OF ALTERNATIVES
ISSUE/RESOURCE: Grazing Management (continued)

Change Agent	Alternative 1 (No Action)	Alternative 2 (Preferred Alternative)	Alternative 3	Alternative 4
-Management direction (cont.)		<p>The grazing preference has been relinquished to BLM and grazing use would be at BLM discretion to relieve emergency situations on other allotments such as fire, vegetative treatments or to allow rest to establish AMP grazing systems elsewhere. Amend AMPs as appropriate to be consistent with RMP decisions.</p> <p>Develop AMPs on the few remaining allotments where desert tortoise habitat is found, to aid in the recovery of the species.</p>		

ISSUE/RESOURCE: Wild, Free-Roaming Burros

MANAGEMENT GUIDANCE COMMON TO ALL ALTERNATIVES:

Public Law 92-195, December 15, 1971 (USC 1331-1340, as amended), made BLM responsible for the welfare and protection of unbranded and unclaimed burros found on public land at the time of the act's passage. There are no wild, free-roaming horses on the Arizona Strip District. The management of burros on public land requires their removal from adjacent private or state land when requested, the development of a herd management area plan, the maintenance of a herd inventory and the removal and disposal of excess animals to the public by adoption. The management of burros on public land is accomplished at the minimum level necessary to assure the herd's free-roaming character, health and self-sustaining ability and to ensure herd management plans are consistent with the category goals, objectives and management action necessary to facilitate recovery of the desert tortoise.

The small wild burro herd in the Tassi area of the Arizona Strip is managed under the Tassi-Gold Butte Herd Management Area Plan (HMAP, Appendix 18), which sets optimum herd numbers in relation to their environment and other multiple-use values.

EXISTING PLANS AND DECISIONS:

- Maintain a healthy population of wild, free-roaming burros in ecological balance with rangeland resources.
- Remove excess burros; limit herd size to 90-100 animals.

CHANGES IN MANAGEMENT BY ALTERNATIVE:

- None

TABLE II - 1
DESCRIPTION OF ALTERNATIVES
ISSUE/RESOURCE: Wildlife Resources

MANAGEMENT GUIDANCE COMMON TO ALL ALTERNATIVES:				
<p>Wildlife and wildlife habitat on public land on the Arizona Strip is managed under provisions of the Sikes Act of 1974, FLPMA of 1976, the PRIA of 1978, the Master Memorandum of Understanding between BLM and the Arizona Game and Fish Commission 1987, and guidance provided in the bureau's Fish and Wildlife 2000 - A Plan for the Future. Specific management direction is contained in the Rangewide Plan for Managing Habitat of Desert Bighorn Sheep on Public Lands, the Waterfowl HMP, and the Raptor HMP. Six HMPs for specific geographic areas have been written between 1976 and 1983 and implemented in cooperation with AGFD to facilitate the maintenance and improvement of wildlife and wildlife habitat (Appendices 17 and 18).</p> <p>Normal revision schedules require that HMPs are periodically evaluated to determine if management direction and actions are adequate and if HMP objectives are being met. Based on monitoring data, changed policies and direction, and wildlife and other resource program needs, the HMPs are updated and revised jointly with AGFD as appropriate. The current HMP process is adequate to incorporate new data, decisions, changes in management direction and policies.</p>				
EXISTING PLANS AND DECISIONS:				
<ul style="list-style-type: none"> - Examine Hurricane Valley for introduction of scaled quail. - Reestablish viable populations of antelope. 				
CHANGES IN MANAGEMENT BY ALTERNATIVE:				
Change Agent	Alternative 1 (No Action)	Alternative 2 (Preferred Alternative)	Alternative 3	Alternative 4
- Management direction	Continue to manage wildlife habitats in accordance with the six HMPs, guidance documents, the district's wildlife policy, and the needs as determined through monitoring studies and HMP evaluations.	Intensify HMP monitoring efforts, increase efforts to identify and correct limiting habitat factors, and emphasize project maintenance. Ensure wildlife management activities do not contribute to the proliferation of natural predators within desert tortoise habitat.	Same as Alternative 2.	Same as Alternative 1.
- Bighorn sheep numbers	Manage identified bighorn sheep habitat as outlined in the HMPs and the bureau's Rangewide Plan for Desert Bighorn Sheep to support 175 head in the Paria, 130 in Kanab Creek, 100 in the Virgin Mountains, and 100 in the Grand Wash Cliffs.	Manage bighorn sheep habitats to support the planned numbers in Alternative 1, while conducting monitoring studies to determine and adjust to optimum numbers consistent with habitat potential and other resource values.	Continue to follow existing HMPs except allow natural processes to determine bighorn sheep populations. Do not supplement existing populations.	Same as Alternative 1.
- Changes in kind of livestock	No change.	Change in kind of livestock actions from cattle to domestic sheep and/or goats would not be authorized within or adjacent to occupied bighorn sheep habitats unless monitoring	Same as Alternative 2.	Same as Alternative 1.

TABLE II - 1
DESCRIPTION OF ALTERNATIVES

ISSUE/RESOURCE: Wildlife Resources (continued)				
Change Agent	Alternative 1 (No Action)	Alternative 2 (Preferred Alternative)	Alternative 3	Alternative 4
- Changes in kind of livestock (cont.)		studies and research indicates a problem does not exist.		
- Lambing Activities	No change.	Activities which could adversely affect the lambing or rearing of newborn bighorn sheep along the lower Grand Wash Cliffs would be limited during the period June 1 to November 30.	Same as Alternative 2.	Same as Alternative 1.
- Enclosure	No change.	Remove the bighorn sheep enclosure from the Paiute Wilderness.	Same as Alternative 2.	Maintain and use the enclosure if the opportunity or need arises.
- Antelope	Manage habitat to support 400 head of pronghorn antelope in the Clay-hole area and 400 head in the Shivwits area.	Manage antelope habitat to support the planned numbers in Alternative 1, including 120 head in House Rock Valley, while conducting monitoring studies to determine and adjust to the optimum numbers consistent with habitat potential and other resource values.	Allow natural processes to determine antelope populations. Do not supplement existing populations.	Same as Alternative 1.
- Kaibab squirrel	No change.	Investigate suitability of habitat for transplanting Kaibab squirrels into ponderosapine habitat at Black Rock and Parashant.	Same as Alternative 2.	Same as Alternative 1.
- Designations	No change.	Manage the Parashant and Mt. Trumbull areas as Resource Conservation Areas, recognizing wildlife as one of the important uses. (See Table II-2 for management prescriptions, and Map II-10.)	Manage Parashant and Mt. Trumbull areas as SRMAs. (See Table II-2 for management prescriptions and Map II-11.)	Same as Alternative 1.

ISSUE/RESOURCE: Recreation Resources

MANAGEMENT GUIDANCE COMMON TO ALL ALTERNATIVES:

FLPMA of 1976 established specific mandates for recreation management regarding the inventory, planning, and management of recreational, scenic, and wilderness values of public lands. Other legislation of particular significance to management of recreational resources on public lands include: the Land and Water Conservation Fund Act (LWCF) of 1964, which provides the basis for fee collection at developed sites and funds for land acquisition; NEPA of 1969, which established national policy for protecting the environment, including natural, cultural, and historic aspects; the National Trail Systems Act of 1968, which established a process for designating national scenic, historic, and recreational trails; the National Wild and Scenic Rivers Act of 1968, which established a process for designating and managing nationally significant river segments; and the Wilderness Act of 1964, which provided criteria for inventorying, designating, and managing wilderness areas. The Arizona Strip District is responsible for managing eight designated wilderness areas. Recreation 2000 - A Strategic Plan highlights specific areas where BLM intends to concentrate recreation management efforts.

TABLE II - 1

DESCRIPTION OF ALTERNATIVES

ISSUE/RESOURCE: Recreation Resources (continued)

Recreation on the Arizona Strip, except for the developed campground in the Virgin River Gorge, is largely unregulated and of a dispersed nature. The most common recreation activities are backcountry vehicle exploring, hunting, camping, sightseeing, hiking and backpacking. Opportunities to do these activities in a remote, uncrowded and unregulated setting are important to those visiting the Strip. Camping is limited to 14 days across the district unless otherwise authorized.

An annual off-road motorcycle race, a wagon trip, and two horse trips along historic trails are the organized recreational events now taking place on the district. Event organizers apply for special recreation use permits that go through the NEPA process to determine if they are environmentally compatible with the management objectives for the area. These applications are handled on a case-by-case basis as they are received.

Management direction and actions include: (1) accommodate current uses, protect cultural values, and complement wilderness management plans where appropriate; (2) provide visitor information to meet visitor needs; (3) use various methods to acquire visitor use data on an annual basis; (4) maintain system of traffic counters, monitor results monthly and field-verify results annually; (5) conduct compliance patrols by district ranger; and (6) on all proposed actions, consider visual impacts and protect scenic values by using mitigation measures where feasible, including alternative locations, camouflage, and vegetative or topographic screening.

EXISTING PLANS AND DECISIONS:

- Improve and increase road signs and develop a sign inventory system.
- Implement actions designed to restore and/or maintain natural conditions or appearance in all areas.
- Maintain primary access roads, particularly to Mt. Trumbull area, on a year-around basis.
- Interpret the natural history, historical and archaeological values in the Mt. Trumbull area.

CHANGES IN MANAGEMENT BY ALTERNATIVE:

Change Agent	Alternative 1 (No Action)	Alternative 2 (Preferred Alternative)	Alternative 3	Alternative 4
RECREATION (see Appendix 20 for ROS class definitions) - Management direction	With the exception of wilderness areas and the Cedar Pockets campground, the Strip is managed for extensive recreation.	Consistent with the following RMP determinations for this alternative.	Same as Alternative 2.	Same as Alternative 2.
<u>Parashant Area</u> - Designations	None	Designate the Parashant Resource Conservation Area (Map II-10) where recreation is one of the primary land uses.	Designate the Parashant as a SRMA (Map II-11), where recreation is a priority land use.	Same as Alternative 1 (Map II-12).

TABLE II - 1
DESCRIPTION OF ALTERNATIVES

ISSUE/RESOURCE: Recreation Resources (continued)				
Change Agent	Alternative 1 (No Action)	Alternative 2 (Preferred Alternative)	Alternative 3	Alternative 4
- Objectives	Allow for backcountry dispersed recreation uses.	<p>Manage recreation in the area to provide opportunities in settings ranging from roaded natural (RN) to semi-primitive non-motorized (SPNM).</p> <p>Ensure continued public use and enjoyment for a variety of recreation activities which do not impair the natural values of the area.</p>	<p>Manage recreation in area to provide opportunities in settings ranging from RN to SPNM.</p> <p>Manage the area in coordination with Lake Mead NRA (NPS) for remote backcountry recreational experiences, i.e. vehicle exploring, backpacking, camping, hiking, hunting, trapping and sightseeing.</p> <p>Promote use of the area for outdoor education.</p> <p>Enhance opportunities for high quality outdoor recreation experiences.</p>	Same as Alternative 1.
- Management direction	No change.	<p>Improve visitor services related to information, interpretation, facility development and maintenance, and safety.</p> <p>Management actions that would be taken for the area are described in Table II-2.</p>	Write an activity plan for SRMA to provide for backcountry experiences.	Same as Alternative 1.
<u>Mt. Trumbull Area</u> - Designations	No special recreation designations.	Designate the Mt. Trumbull Resource Conservation Area (RCA) where recreation is one of the primary land uses as shown on Map II-10.	Establish the Mt. Trumbull Special Recreation Management Area (SRMA) where recreation is a priority land use as shown on Map II-11.	Same as Alternative 1.
- Objectives	Allow for backcountry, dispersed recreation uses.	<p>Manage the RCA to provide recreation opportunities in settings ranging from Roaded Natural to Primitive (see ROS class definitions, Appendix 20.)</p> <p>Promote the conservation of the area's multiple-use values for education, scientific study and public recreation activities.</p>	<p>Manage the SRMA to provide recreation opportunities in settings ranging from Roaded Natural to Primitive (see ROS class definitions, Appendix 20.)</p> <p>Promote conservation and careful development of the area's scenic, natural, wildlife and cultural values to a moderate degree.</p>	Manage for extensive recreation (see ERMA, area A).

TABLE II - 1
DESCRIPTION OF ALTERNATIVES

ISSUE/RESOURCE: Recreation Resources (continued)				
Change Agent	Alternative 1 (No Action)	Alternative 2 (Preferred Alternative)	Alternative 3	Alternative 4
- Management direction	No change.	Management actions that would be taken for the area are described in Table II-2.	Management actions that would be taken for the area are described in Table II-2.	Same as Alternative 1.
<u>Canyons/Plateaus of the Paria</u>				
- Designations	Vermilion Cliffs Natural Area designation remains in effect.	Designate the Canyons and Plateaus of the Paria area as a Special Recreation Management Area (SRMA) (Map II-10).	Designate the Canyons and Plateaus of the Paria SRMA and designate the Paria Plateau ACEC (Map II-11).	Designate a portion of Paria Plateau as an ACEC for cultural values (see Cultural Resources) (Map II-12).
- Objectives	Allow for backcountry, dispersed recreation uses. Protect scenic values of Vermilion Cliffs Natural Area.	Manage recreation in area to provide opportunities in settings ranging from RN to SPNM. Manage the SRMA in a manner that would: - Ensure continued public use and enjoyment for a variety of recreation activities and scientific studies. - Protect, stabilize and allow the public to enjoy the historic sites and the significant archaeological resources. - Improve visitor services related to information, interpretation, facility development and maintenance, and safety.	Manage recreation in area to provide opportunities in settings ranging from RN to SPNM. Manage the SRMA/ACEC in a manner that would: - Ensure continued public use and enjoyment for a variety of semi-primitive recreation activities and scientific studies. - Protect, stabilize and allow the public to enjoy the historic sites and the significant archaeological resources. - Improve visitor services related to information, interpretation, and safety.	Manage recreation in ACEC to provide opportunities in settings ranging from RN to SPNM. (See ERMA, area A for non-ACEC portion.)
- Management direction	No change.	See Table II-2 for a description of the management prescription of this SRMA.	Same as Alternative 2.	Same as Alternative 1.
<u>Extensive Recreation Management Area (ERMA) in Area A</u>				
- Objectives	(No area A guidelines applied under this alternative.)	Manage 1.9 million acres of the A areas (exclusive of special designations) as an ERMA (Maps II-1 and II-10).	Manage 1.6 million acres of A areas (exclusive of special designations) as an ERMA (Maps II-2 and II-11).	Manage 2.2 million acres of A areas (exclusive of special designations) as an ERMA (Maps II-3 and II-12).

TABLE II - 1
DESCRIPTION OF ALTERNATIVES

ISSUE/RESOURCE: Recreation Resources (continued)				
Change Agent	Alternative 1 (No Action)	Alternative 2 (Preferred Alternative)	Alternative 3	Alternative 4
- Objectives (continued)	Allow for dispersed recreation uses.	Provide settings for recreation opportunities associated with motorized vehicle use such as exploring backcountry roads, vehicle camping, picnicking and firewood cutting. Allow for some changes in ROS classes from SPM to semi-primitive motorized (SPM) or from SPM to RN where deemed necessary to meet recreation needs or other resource development (see ROS setting descriptions, Appendix 20). Provide recreation settings where restrictions on visitors are not noticeable, but blend with the natural setting. Ensure maintenance of the desired recreation settings.	Same as Alternative 2.	Same as Alternative 2.
- Management direction	No change.	Same as Alternative 1, plus develop district and individual resource area sign plans to provide appropriate road information for interpretation, public safety, and to coordinate with the new Arizona Strip visitor map. Develop a plan for river running on the Virgin River to include: put-in and take-out points, information on minimum flows needed to run the river and acquisition of the current flow rate. Regulate visitor use only when monitoring indicates a need for limiting or restricting use.	Same as Alternative 2.	Same as Alternative 2.
<u>Extensive Recreation Management Area (ERMA) in B Areas</u> - Objectives	(No area B guidelines applied under this alternative.)	Manage 613,000 acres in the B area (exclusive of special designations) as an ERMA (Maps II-1 and II-10).	Manage 895,000 acres in the B area (exclusive of special designations) as an ERMA (Maps II-2 and II-11).	Manage 271,000 acres in the B area (exclusive of special designations) as an ERMA (Maps II-3 and II-12).

TABLE II - 1
DESCRIPTION OF ALTERNATIVES

ISSUE/RESOURCE: Recreation Resources (continued)				
Change Agent	Alternative 1 (No Action)	Alternative 2 (Preferred Alternative)	Alternative 3	Alternative 4
<u>Extensive Recreation Management Area (ERMA) in B Areas</u> - Objectives (cont.) - Management direction	Allow for dispersed recreation uses.	Ensure continued public use and enjoyment for a variety of recreation activities which are compatible with the protection and enhancement of natural and cultural values. Enhance opportunities for high quality, backcountry recreation experiences and provide for a range of recreation activities, including camping, vehicle exploring, sightseeing, hiking, limited off-road travel, horse riding, rock hounding and hunting. Provide recreation settings where restrictions on visitors are present but subtle. Ensure maintenance of the desired resource and social settings.	Same as Alternative 2.	Same as Alternative 2.
	No change.	Regulate visitor use only when monitoring indicates a trend toward unacceptable change to desired recreation settings brought about by such use. Maintain sign inventory and develop sign plans to be compatible with the objectives of the area. Generally, signing would be the minimum necessary to provide for public safety and information.	Same as Alternative 2.	Same as Alternative 2.
	Not applicable.	Virgin River eligible for study. Paria River suitable for designation (Appendix 21).	Same as Alternative 2.	Same as Alternative 2.
<u>WILD & SCENIC RIVERS</u> (see Appendix 21 and Maps II-16 & 17 for eligibility and classification narrative) - Eligibility				

TABLE II - 1
DESCRIPTION OF ALTERNATIVES

ISSUE/RESOURCE: Recreation Resources (continued)				
Change Agent	Alternative 1 (No Action)	Alternative 2 (Preferred Alternative)	Alternative 3	Alternative 4
- Classification	Not applicable.	Virgin River in Arizona potentially classified as wild from Utah state line to first I-15 bridge, scenic from I-15 bridge to Virgin River Campground and recreational from the campground to Nevada state line (Map II-22). Paria River in Arizona (exclusive of GCNRA) potentially classified as wild and scenic (Map II-23 and Appendix 21).	Same as Alternative 2.	Same as Alternative 2.
<u>OHV DESIGNATIONS</u> - Designations	Shivwits Resource Area has the following designations: LIMITED TO DESIGNATED ROADS AND TRAILS: 20,400 acres, LIMITED TO EXISTING ROADS AND TRAILS: 1,238,500 acres, CLOSED to OHVs: 138,000 acres. Vermillion Resource Area has designated: CLOSED to OHVs: 133,000 acres with the remainder: NOT DESIGNATED or classed as OPEN.	Designate OHV use areas for the Arizona Strip District as follows (Map II-24): OPEN: 1,400 acres LIMITED TO EXISTING ROADS AND TRAILS: 1,811,900 acres, LIMITED TO DESIGNATED ROADS AND TRAILS: 690,400 acres CLOSED: 45,100 acres, (excludes wilderness) See Appendix 22 for OHV designations. The closed areas on the Beaver Dam Slope and Marble Canyon rim have primary roads bisecting them.	Designate OHV use areas for the Arizona Strip District as follows (Map II-25): OPEN: 0 acres, LIMITED TO EXISTING ROADS AND TRAILS: 1,897,000 acres, LIMITED TO DESIGNATED ROADS AND TRAILS: 558,800 acres, CLOSED: 92,600 acres (excludes wilderness). See Appendix 22 for OHV designations.	Designate OHV use areas for the Arizona Strip District as follows (Map II-26): OPEN: 4,500 acres, LIMITED TO EXISTING ROADS AND TRAILS: 2,374,500 acres, LIMITED TO DESIGNATED ROADS AND TRAILS: 169,000 acres, CLOSED 400 acres, (excludes wilderness). See Appendix 22 for OHV designations.
- Management direction	Closed areas signed, public awareness through visitor information.	Complete an OHV management plan for the district designating roads to be open or closed. Prepare information for the public such as maps, brochures and signs as well as specific definitions for the OHV classes, exceptions, if any, and how these exceptions would be managed. Close all sand dunes around Cottonwood Wilderness Area.	Same as Alternative 2.	Same as Alternative 2.

TABLE II - 1
DESCRIPTION OF ALTERNATIVES

ISSUE/RESOURCE: Recreation Resources (continued)				
Change Agent	Alternative 1 (No Action)	Alternative 2 (Preferred Alternative)	Alternative 3	Alternative 4
<u>VISUAL RESOURCES</u> - Designations	22,000 acres in the Virgin River Gorge are in a Scenic Withdrawal. 265,600 acres are designated class I due to wilderness designation. There are no other VRM designations although there is a VRM inventory (Map II-27 and Appendix 23).	Designate Visual Resource Management Classes for the Arizona Strip District as follows: - Designate 276,000 acres class I; - Designate 763,000 acres class II (includes all of area B and the primary travel corridors); - Designate 528,000 acres class III; - Designate 1,556,000 acres class IV (Map II-28 and Appendix 23).	Designate Visual Resource Management Classes for the Arizona Strip District as follows: - Designate 339,000 acres class I; - Designate 856,000 acres class II (includes all of area B and the primary travel corridors); - Designate 480,000 acres class III; - Designate 1,448,000 acres class IV (Map II-29 and Appendix 23).	Designate Visual Resource Management Classes for the Arizona Strip District as follows: - Designate 269,000 acres class I; - Designate 498,000 acres class II (includes all of area B and the primary travel corridors); - Designate 591,000 acres class III; - Designate 1,765,000 acres class IV (Map II-30 and Appendix 23).
- Management guidance	No change.	Same as Alternative 1, plus designations are designed to maintain the existing character of the landscape along primary travel corridors, special management areas and in accordance with the area's objectives. Consider designating the Virgin River Gorge (I-15 and Highway 89A as Scenic Byways and the Mt. Trumbull and Quail / Mainstreet roads as Back Country Byways.	Same as Alternative 2.	Same as Alternative 2.
- Improvement areas	No specific areas are identified.	Activities which would cause adverse long-term impacts to the important visual resources in the following areas would be prohibited or the impact mitigated to the extent practicable: Hurricane, Upper and Lower Grand Wash Cliffs; Diamond Butte; Moccasin Mountain; Andrus, Parashant, Grama and Kanab Creek Canyons. Improve the aesthetics of the acquired lands in the Parashant area by feathering the edges of the seedings.	Same as Alternative 2.	Activities which would cause adverse long-term impacts to the important visual resources in the following areas would be prohibited or the impact mitigated to the extent practicable: Upper and Lower Grand Wash Cliffs; Moccasin Mountain; Andrus, Parashant, Grama and Kanab Creek Canyons.

TABLE II - 1
DESCRIPTION OF ALTERNATIVES

ISSUE/RESOURCE: Wilderness	
<u>MANAGEMENT GUIDANCE COMMON TO ALL ALTERNATIVES:</u>	
<p>The Arizona Strip District's wilderness program includes eight designated wilderness areas. BLM is mandated to manage these areas for their wilderness values by the authority of <u>FLPMA of 1976</u>, the <u>Wilderness Act of 1964</u>, <u>Arizona Wilderness Act of 1984</u>, <u>43 CFR 8560</u> and <u>BLM Manual 8560</u>.</p> <p>Wilderness management plans have been developed or drafted for the Paria Canyon-Vermillion Cliffs, Mt. Trumbull-Mt. Logan, Paiute-Beaver Dam Mountains, and the Grand Wash Cliffs wilderness areas. Additional plans are being developed to provide specific management direction for the Cottonwood Point and Kanab Creek wilderness areas. Land use proposals adjacent to wilderness are reviewed to assure wilderness values are considered. State lands have been acquired in the wilderness areas. Private land inholdings are acquired if they become available and are managed as wilderness once acquired. Current management direction is adequate.</p>	
<u>EXISTING PLANS AND DECISIONS:</u>	
<ul style="list-style-type: none"> - Wilderness management plans for Paiute-Beaver Dam Mountains and Paria Canyon-Vermillion Cliffs, draft wilderness plans for Mt. Trumbull/Mt. Logan, Grand Wash Cliffs, and Cottonwood Point. 	
<u>CHANGES IN MANAGEMENT BY ALTERNATIVE:</u>	
<ul style="list-style-type: none"> - None 	
ISSUE/RESOURCE: Transportation/Access	
<u>MANAGEMENT GUIDANCE COMMON TO ALL ALTERNATIVES:</u>	
<p>Road maintenance and construction is done in support of resource management objectives. Maintenance and construction requirements and priorities are determined on a yearly basis as a part of the annual work planning process. Emergency reconstruction and maintenance of roads damaged by flooding is handled on a case-by-case basis when the need arises.</p> <p>Specific road and trail construction standards are determined based on consideration of resource management needs. These include but are not limited to user safety and impacts to environmental values including but not limited to wildlife habitat, soil stability, recreation, visual resources and construction and maintenance costs.</p> <p>Maintain the open space, scenic character and remoteness of public lands. Maintain existing access where needed to meet public and administrative needs.</p> <p>Acquire legal access for existing roads and trails as identified in land use plans and in accordance with established priorities.</p>	
<u>EXISTING PLANS AND DECISIONS:</u>	
<ul style="list-style-type: none"> - Upgrade Quail Hill road to a graveled all-season access road. 	

TABLE II - 1
DESCRIPTION OF ALTERNATIVES
ISSUE/RESOURCE: Transportation/Access (continued)

ISSUE/RESOURCE: Transportation/Access (continued)				
CHANGES IN MANAGEMENT BY ALTERNATIVE:				
Change Agent	Alternative 1 (No Action)	Alternative 2 (Preferred Alternative)	Alternative 3	Alternative 4
- Existing roads	Not applicable.	Close and rehabilitate existing roads where no public or administrative need exists in areas where closed to OHV or where OHVs are limited to designated roads and trails. Reclaim newly constructed access upon termination of the specific need (690,400 acres, Map II-24).	Same as Alternative 2, except smaller area (558,800 acres, Map II-25).	Same as Alternative 2, except smaller area (169,000 acres, Map II-26).
- Access	Not applicable.	Acquire legal access to public lands in 14 priority/locations (Appendix 24).		

ISSUE/RESOURCE: Fire Management

MANAGEMENT GUIDANCE COMMON TO ALL ALTERNATIVES:

The authority for fire management on public land comes from FLPMA of 1976, Protection Act of 1922, Reciprocal Fire Protection Act of 1955, IGA of 1934 and others. Interior Manual 910 and BLM Manual 9200 give further guidance on public land fire management.

Current BLM policy states that every wildland fire is either a wildfire or a prescribed fire. A wildfire must have appropriate action taken to suppress it. Appropriate actions are based upon preplanned analysis consistent with land management objectives, including the threat to life and property. Fire suppression actions must be planned and executed to minimize suppression costs plus resource losses, consistent with management objectives. A Fire Management Activity Plan has been completed for the district. The fire management activity plan identifies full suppression within desert tortoise habitat. An escaped fire analysis will be prepared to govern suppression actions for all escaped fires.

From 1981 to 1988 the district operated under a Limited Fire Suppression Plan. This plan divides the district into two zones, Suppression and Monitor. Current guidance does not allow fire management in a monitor category. Prescription criteria need to be developed to allow monitoring of fires meeting specific conditions as prescribed natural fires. The prescription criteria would be developed and in place by the 1990 fire season.

Much of the Arizona Strip District has potential for improvement through the use of prescribed fire. Prescribed fires ignited by BLM personnel are used to improve livestock forage, wildlife habitat, and watershed conditions, and to reduce fire hazard.

If a fire is reported in an area covered by a preplanned prescription, a qualified observer may record weather and fire conditions. Generally these fires are in areas of low resource values, contained within natural or manmade barriers, and have no long duration potential.

Special policies, considerations, and procedural requirements apply to suppression of fires in wilderness areas. The minimum tool policy is used in the suppression of wildfires in wilderness areas, emphasizing the use of hand crews. Aircraft and other mechanized suppression methods may be used in emergency situations if it is determined that they are the minimum tools necessary to accomplish the suppression effort. A wilderness specialist is assigned to fires in wilderness areas to insure that wilderness needs, considerations and policies are incorporated into suppression decisions, strategies and operations. Use of motorized equipment or aircraft requires special approval.

TABLE II - 1
DESCRIPTION OF ALTERNATIVES

ISSUE/RESOURCE: Fire Management (continued)	
<p>Prescribed fire may be allowed in wilderness areas where it benefits wilderness resources and are specified in wilderness management plans.</p> <p>Wilderness fire management plans will be completed for all wilderness areas in the district by fiscal year 1989 and implemented by the 1990 fire season.</p>	
<u>EXISTING PLANS AND DECISIONS:</u>	
<ul style="list-style-type: none"> - Fire management plans for each wilderness area and district fire management plan. 	
<u>CHANGES IN MANAGEMENT BY ALTERNATIVE:</u>	
<ul style="list-style-type: none"> - None 	
ISSUE/RESOURCE: Hazardous Materials (HAZMAT) Management	
<u>MANAGEMENT GUIDANCE COMMON TO ALL ALTERNATIVES:</u>	
<p>The three laws most commonly associated with HAZMAT include the <u>Resource Conservation and Recovery Act (RCRA)</u>, or PL 94-580; the <u>Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)</u>, or PL 96-510, otherwise known as the <u>Superfund Act</u>; and the <u>Superfund Amendment Reauthorization Act (E.O. 12580, 1986)</u>. BLM responsibilities under these acts include conformance with state RCRA enforcement regulations pertaining to the storage, handling and disposal of hazardous materials and reporting unpermitted HAZMAT discharges under the provisions of CERCLA. Action by BLM includes reporting, necessary site security, coordination of procedural cleanup steps, and monitoring results of the cleanup.</p>	
<u>EXISTING PLANS AND DECISIONS:</u>	
<ul style="list-style-type: none"> - Arizona Strip District Hazardous Material Response Plan. 	
<u>CHANGES IN MANAGEMENT BY ALTERNATIVE:</u>	
<ul style="list-style-type: none"> - None 	
ISSUE/RESOURCE: Environmental Management	
<u>MANAGEMENT GUIDANCE COMMON TO ALL ALTERNATIVES:</u>	
<p>In compliance with <u>NEPA</u> and <u>CEQ</u> regulations, BLM would prepare site-specific environmental reviews before actions proposed in this RMP/EIS are implemented. The environmental reviews provide site-specific assessments of the impacts of implementing these actions. As appropriate, these reviews are documented in Categorical Exclusion Reviews, Environmental Assessments and Decision Records, or Environmental Impact Statements and Records of Decision. In addition, BLM assures that inventories for threatened and endangered species and cultural resources are conducted as a part of the environmental review process. The review identifies mitigation necessary to reduce the adverse impacts of implementing a proposed action. All environmental documents are available for public review.</p>	

TABLE II - 1

DESCRIPTION OF ALTERNATIVES

ISSUE/RESOURCE: Environmental Management (continued)

EXISTING PLANS AND DECISIONS:

- None

CHANGES IN MANAGEMENT BY ALTERNATIVE:

- None

ISSUE/RESOURCE: Law Enforcement

MANAGEMENT GUIDANCE COMMON TO ALL ALTERNATIVES:

The authority for law enforcement on public lands comes from FLPMA Sec. 303. This section grants the Secretary of the Interior the authority to issue rules and regulations pertaining to management, use, and protection of public lands; enter into cooperative agreements with local law enforcement agencies and/or authorize federal personnel to carry out his law enforcement responsibilities. BLM Manual 9260 gives further guidance on law enforcement on public lands.

The goal of law enforcement on the Arizona Strip is the prevention of violations of federal law relating to public lands through voluntary compliance of applicable laws. This is best accomplished by educating the users of public lands and through regular patrols by the district ranger(s). When voluntary compliance is not possible, district and state law enforcement personnel are responsible for the enforcement of applicable laws and regulations as they relate to the use, management, and development of public lands and resources and public safety.

EXISTING PLANS AND DECISIONS:

- None

CHANGES IN MANAGEMENT BY ALTERNATIVE:

- None

TABLE II - 2
MANAGEMENT PRESCRIPTIONS FOR SPECIAL MANAGEMENT AREAS
Resource Conservation Areas (RCA), Areas of Critical Environmental Concern (ACEC), Special Recreation Management Areas (SRMA).

Site or Area	Values	Designation by Alternative	Lands	Locatable & Mineral Material Mgt	Fluid Minerals	Cultural / Recreation	Range Mgt	Roads and Access	Forest & Woodland Mgt	Off-Highway Vehicles (OHV)	Other
BEAVER DAM SLOPE	Desert Tortoise	#2 ACEC (20,800 acres)	Acquire non-federal lands where available within tortoise habitat. Manage utility corridor to meet needs of applicant and to minimize impacts to tortoise.	Plan of operation required to eliminate impacts to desert tortoise. Close to mineral material disposals.	Open to leasing subject to the requirements imposed by the OHV closure. Activities may be limited by season as needed to protect habitat of the desert tortoise.	---	Continue management consistent with the Rangewide Desert Tortoise Plan category guidelines, the Endangered Species Act, and existing AMPs.	Allow only temporary upgrading of existing roads. Allow new roads on a temporary basis only. Rehabilitate back to near original condition all closed roads.	---	Close to OHV (primary roads bisect the closed area).	Implement tortoise habitat recommendations of the Rangewide Desert Tortoise Plan. Increase public awareness by signing, information & education. Implement ranger patrol. Conduct ecological site inventory and appropriate research.
		#3 ACEC (20,800 acres)	Same as Alternative 2.	Close to mineral location. Same management as Alternative 2 for any plan submitted on existing mining claims located within the ACEC. Close to mineral material disposal	Open to lease subject to the no surface occupancy stipulation.	---	Same as Alternative 2.	Same as Alternative 2.	---	Same as Alternative 2.	Same as Alternative 2.

TABLE II - 2

MANAGEMENT PRESCRIPTIONS FOR SPECIAL MANAGEMENT AREAS

Resource Conservation Areas (RCA), Areas of Critical Environmental Concern (ACEC), Special Recreation Management Areas (SRMA).

Site or Area	Values	Designation by Alternative	Lands	Locatable & Mineral Material Mgt	Fluid Minerals	Cultural / Recreation	Range Mgt	Roads and Access	Forest & Woodland Mgt	Off-Highway Vehicles (OHV)	Other
BEAVER DAM SLOPE (CONT.)		#4 NO SPECIAL DESIGNATION	Same as Alternative 2.	—	Same as Alternative 2.	—	Same as Alternative 2.	Same as Alternative 2.	—	Limit to existing roads and trails.	Implement tortoise habitat classification and management criteria of the Range-wide Desert Tortoise Plan.
VIRGIN RIVER CORRIDOR	Riparian Endangered Fish Scenic Values	#2 ACEC (8,100 acres)	Acquire lands with riparian and high resource values when opportunities occur.	Continue withdrawal from mineral location in gorge. Plan of operation required for portion of ACEC between existing withdrawal and Nevada state line. Special mitigation required to minimize impacts to riparian, scenic and recreation values and avoid impacts to endangered fish species. Close to mineral material disposals.	Open to lease in gorge subject to the no surface occupancy stipulation.	Study river for wild and scenic values Write an activity plan to provide a variety of visitor uses in the Virgin River Campground and surrounding areas including longer visitor use. Uses could include tent and self-contained camping, river running and recreation and wilderness use. Include a detailed plan for operating and maintaining campground facilities.	Continue existing rangeland management. Monitor condition and trend and adjust management accordingly.	Allow only temporary upgrading of existing roads. Allow new roads on a temporary basis only. Upgrade campground loop and access roads to accommodate modern recreational vehicles.	Closed to all woodland product sales. Allow collection of dead and down wood for personal campsite use only.	Limit to designated roads and trails. Implement ranger patrol.	Acquire instream water rights. Emphasize fire control and management. Control exotic wildlife species and feral livestock. Monitor for water quality. Provide for day use and overnight camping at campground for both short and long term visitors.

TABLE II - 2
MANAGEMENT PRESCRIPTIONS FOR SPECIAL MANAGEMENT AREAS

Resource Conservation Areas (RCA), Areas of Critical Environmental Concern (ACEC), Special Recreation Management Areas (SRMA).

Site or Area	Values	Designation by Alternative	Lands	Locatable & Mineral Material Mgt	Fluid Minerals	Cultural / Recreation	Range Mgt	Roads and Access	Forest & Woodland Mgt	Off-Highway Vehicles (OHV)	Other
VIRGIN RIVER CORRIDOR (CONT.)		#3 ACEC (8,100 acres)	Same as Alternative 2.	Withdraw entire ACEC from mineral location. Same management as Alternative 2 for plans submitted on mining claims located within the ACEC. Retain Virgin River Scenic Withdrawal. Close to mineral material disposals.	Same as Alternative 2.	Same as Alternative 2.	Same as Alternative 2.	Same as Alternative 2.	Same as Alternative 2.	Same as Alternative 2.	Same as Alternative 2.
		#4 NO SPECIAL DESIGNATION	Same as Alternative 2.	Same as Alternative 2, except plan of operations not required.	Same as Alternative 2.						
LITTLE BLACK MOUNTAIN	Cultural	#2 ACEC (200 acres)	Retain in public ownership.	Plan of operation required with special mitigation to avoid impacts to cultural resources. Close to mineral material disposals.	---	Develop a cultural resource project plan (CRPP). Interpret area for public use. Conduct cultural survey of area.	---	Improve road access, provide a parking area.	---	Limit to designated roads and trails.	Implement ranger patrol.

TABLE II - 2

MANAGEMENT PRESCRIPTIONS FOR SPECIAL MANAGEMENT AREAS

Resource Conservation Areas (RCA), Areas of Critical Environmental Concern (ACEC), Special Recreation Management Areas (SRMA).

Site or Area	Values	Designation by Alternative	Lands	Locatable & Mineral Material Mgt	Fluid Minerals	Cultural / Recreation	Range Mgt	Roads and Access	Forest & Woodland Mgt	Off-Highway Vehicles (OHV)	Other
LITTLE BLACK MOUNTAIN (CONT.)		#3 ACEC (200 acres)	Same as Alternative 2.	Close to mineral location. Same management as Alternative 2 for plans submitted on existing mining claims located within the ACEC. Close to mineral material disposals.	Open to lease subject to the no surface occupancy stipulation.	Same as Alternative 2.	---	Same as Alternative 2.	---	Same as Alternative 2.	Same as Alternative 2.
		#4 NO SPECIAL DESIGNATION	Same as Alternative 2.	---	---	---	---	---	---	---	Same as Alternative 2.
FORT PIERCE	Endangered Species (<i>Pediocactus sileri</i>) Critical Watershed	#2 ACEC (900 acres)	Retain in public ownership.	Plan of operation required with special mitigation to avoid impacts to <i>Pediocactus sileri</i> and critical watershed values. Close to mineral material disposals.	---	---	Maintain existing natural vegetation.	---	---	Limit to designated roads and trails.	Develop a watershed activity plan.

TABLE II - 2

MANAGEMENT PRESCRIPTIONS FOR SPECIAL MANAGEMENT AREAS

Resource Conservation Areas (RCA), Areas of Critical Environmental Concern (ACEC), Special Recreation Management Areas (SRMA).

Site or Area	Values	Designation by Alternative	Lands	Locatable & Mineral Material Mgt	Fluid Minerals	Cultural / Recreation	Range Mgt	Roads and Access	Forest & Woodland Mgt	Off-Highway Vehicles (OHV)	Other
FORT PIERCE (CONT.)	Endangered Species (<i>Pediocactus sileri</i>) Critical Watershed Values and Unique Cryptogam Communities	#3 ACEC (To include both <i>P. sileri</i> and critical watershed areas.) (3,600 acres)	Same as Alternative 2.	Close to mineral location. Close to mineral material disposals. Plan of operations required on existing claims.	Open to lease subject to no surface occupancy stipulations.	---	Same as Alternative 2.	---	---	Same as Alternative 2.	Implement ranger patrol.
		#4 NO SPECIAL DESIGNATION	Same as Alternative 2.	---	---	---	Same as Alternative 2.	---	---	Same as Alternative 2.	---
MARBLE CANYON	Endangered Species (<i>Pediocactus bradyi</i>)	#2 ACEC (10,700 acres)	Acquire state land. Do not allow R/W construction, air-ports, landfills or other surface disturbance which cannot be fully mitigated or totally compatible with area's special values.	Plan of operations required with special mitigation required to avoid impacts to <i>Pediocactus bradyi</i> . Close to mineral material disposals.	Open to lease subject to seasonal stipulations.	Maintain access and allow camping at overlooks.	Prohibit vegetation manipulation projects.	Low maintenance on roads.	---	Close to OHV use.	Class II visual.
		#3 ACEC (15,500 acres)	Same as Alternative 2.	Close to mineral location.	Open to lease subject to the no surface occupancy stipulation.	Allow no camping at overlooks.	Allow no livestock water development within 1 mile of ACEC.	Close and rehabilitate roads within 1/4-mile of ACEC.	---	Close all roads within 1/4-mile of ACEC boundary.	Same as Alternative 2.

TABLE II - 2

MANAGEMENT PRESCRIPTIONS FOR SPECIAL MANAGEMENT AREAS

Resource Conservation Areas (RCA), Areas of Critical Environmental Concern (ACEC), Special Recreation Management Areas (SRMA).

Site or Area	Values	Designation by Alternative	Lands	Locatable & Mineral Material Mgt	Fluid Minerals	Cultural / Recreation	Range Mgt	Roads and Access	Forest & Woodland Mgt	Off-Highway Vehicles (OHV)	Other
MARBLE CANYON (CONT.)				Same management as Alternative 2 for plans submitted on claims within the ACEC. Close to mineral material disposals.							
		#4 NO SPECIAL DESIGNATION	Same as Alternative 2.	---	---	---	Guided by Pediocactus HMP and recovery plan.	No maintenance.	---	Limit to existing roads and trails.	Manage according to existing HMP and recovery plan.
JOHNSON SPRING (2,400 acres) LOST SPRING MOUNTAIN (9,800 acres) MOONSHINE RIDGE (5,500 acres)	Cultural Threatened and Endangered Species (<i>Pediocactus silei</i>)	#2 ACEC (17,800 acres)	Acquire state and private inholdings if available and found to be in the public interest.	Plan of operation required with special mitigation to avoid impacts to cultural resources or Pediocactus silei. Close to mineral material disposals.	---	Develop cultural resource project plans (CRPP). Manage for information, conservation and public use. Conduct class II inventory, refine boundary.	No new range improvements allowed within 100 yards of significant sites. No mechanical vegetation manipulation allowed.	Close unnecessary roads.	Close to all woodland product sales.	Limit to designated roads and trails.	Implement ranger patrol.
		#3 ACEC (17,800 acres)	Same as Alternative 2.	Close to mineral location. Same management as Alternative 2 for plans submitted on claims within the ACEC.	Open to lease subject to the no surface occupancy stipulation.	Same as Alternative 2.	Prohibit vegetation manipulation by all methods.	Same as Alternative 2.	Same as Alternative 2.	Close to OHV use.	Same as Alternative 2.

TABLE II - 2
MANAGEMENT PRESCRIPTIONS FOR SPECIAL MANAGEMENT AREAS
Resource Conservation Areas (RCA), Areas of Critical Environmental Concern (ACEC), Special Recreation Management Areas (SRMA).

Site or Area	Values	Designation by Alternative	Lands	Locatable & Mineral Material Mgt	Fluid Minerals	Cultural / Recreation	Range Mgt	Roads and Access	Forest & Woodland Mgt	Off-Highway Vehicles (OHV)	Other
JOHNSON SPRING, LOST SPRING MTN, MOONSHINE RIDGE (CONT.)			Close to mineral material disposals.	----	----	----	----	----	----	----	----
		#4 NO SPECIAL DESIGNATION	----	----	----	----	----	----	----	----	Same as Alternative 2.
WITCH POOL (260 acres) NAMPAAWEAP (550 acres)	Cultural	#2 ACEC (810 acres)	----	Plan of operation required with special mitigation to avoid impacts to cultural resources. Close to mineral material disposals.	----	Manage areas for public use.	No vegetation conversion allowed. No new range improvements allowed within 100 yards of significant sites. Clean up broken pipe along Arkansas Ranch road.	No new roads.	Close to all woodland product sales.	Limit to designated roads and trails.	Implement ranger patrol.
		#3 ACEC (810 acres)	----	Close to mineral location. Same management as Alternative 2 for any plans submitted on existing mining claims located within the ACEC. Close to mineral material disposals.	Open to leasing subject to the no surface occupancy stipulation.	Same as Alternative 2.	No mechanical vegetation conversion allowed.	No new roads, reclaim unnecessary roads.	Same as Alternative 2.	Close to OHV use.	Same as Alternative 2.

TABLE II - 2

MANAGEMENT PRESCRIPTIONS FOR SPECIAL MANAGEMENT AREAS

Resource Conservation Areas (RCA), Areas of Critical Environmental Concern (ACEC), Special Recreation Management Areas (SRMA).

Site or Area	Values	Designation by Alternative	Lands	Locatable & Mineral Material Mgt	Fluid Minerals	Cultural / Recreation	Range Mgt	Roads and Access	Forest & Woodland Mgt	Off-Highway Vehicles (OHV)	Other
WITCH POOL NAMPAAWEAP (CONT.)		#4 NO SPECIAL DESIGNATION	---	---	---	Complete ongoing inventory.	---	---	---	---	Continue ranger patrol.
CANYONS/ PLATEAUS OF THE PARIA	Cultural Recreation Scenic Geologic Wilderness	#2 SRMA (227,000 acres)	Acquire state and private inholdings if available and found to be in the public interest.	Close to mineral material disposals.	---	Develop cultural resource project plans (CRPP).	No new range improvements allowed within 100 yards of significant cultural properties. Maintain good to excellent ecological condition.	Close unnecessary roads. Low maintenance level for open roads.	Close to all woodland product sales except Christmas trees and pinenuts.	Limit to designated roads and trails on plateaus. Limit to existing roads and trails in Ferry Swale.	Establish a BLM administration site at Pine Tree Pockets.
			Discourage above-ground R/W on the Paria Plateau.			Conduct class II cultural inventory, refine boundary.		No new permanent roads.			Implement ranger patrol.
			Corridor in Ferry Swale 1/2-mile wide			Write RAMP for area.	Revise AMPs to be consistent with WMP, CRPP and RAMP.				Maintain class III VPM north of powerline (500 KV) and maintain class II VPM for remainder.
		#3 ACEC (186,600 acres) WITHIN SRMA (227,000 acres)	No landfills on plateaus.			Conduct class II recreation inventory.					Consider Paria River for a wild and scenic river designation.
			Close to airports.			Develop plan for Arizona Trail.					
						Signing for public safety and special features.					
			Same as Alternative 2.	Close to mineral location.	Open to lease subject to the no surface occupancy stipulation.	Write RAMP for Paria and Ferry Swale compatible with WMP.	Prohibit vegetation conversion projects.	Same as Alternative 2.	Closed to all woodland product sales.	Limit to designated roads area-wide.	Class II VPM area-wide.
				Plan of operation required on claims within the ACEC.		Conduct level II recreation inventory.					Consider the Paria River for a wild and scenic river designation.
				Close to mineral material disposals.		Signing for safety only.					Implement ranger patrols.

TABLE II - 2
MANAGEMENT PRESCRIPTIONS FOR SPECIAL MANAGEMENT AREAS
Resource Conservation Areas (RCA), Areas of Critical Environmental Concern (ACEC), Special Recreation Management Areas (SRMA).

Site or Area	Values	Designation by Alternative	Lands	Locatable & Mineral Material Mgt	Fluid Minerals	Cultural / Recreation	Range Mgt	Roads and Access	Forest & Woodland Mgt	Off-Highway Vehicles (OHV)	Other
CANYONS/ PLATEAUS OF THE PARIA (CONT.)		#4 ACEC (77,000 acres)	Revoke Vermillion Cliffs Natural Area withdrawal. Consider airport proposals outside ACEC.	Same as Alternative 2. Plan of operations required with special mitigation to avoid impacts to cultural resources on ACEC.	---	Same as Alternative 2.	Same as Alternative 2.	Same as Alternative 2.		Limit to existing roads and trails on plateau. Designate open area in Ferry Swale.	Consider the Paria River for a wild and scenic river designation.
PARASHANT AREA	Wildlife Habitat Livestock Grazing Recreation	#2 RCA (51,000 acres)	Where feasible place linear R/Ws underground along existing roads.	Allow loca- table mineral exploration and devel- opment sub- ject to special stipulations attached to plans of operation to maintain and restore unique features and remoteness. These stipula- tions would be developed to address site-specific needs. Manage the mineral material program in accordance with the area B guidelines.	---	Provide a broad spectrum of backcountry opportunities with low managerial regulation. Protect and interpret historical features. Conduct a class II cultural resource inventory.	No new permanent grazing authorizations. Grazing will be at BLM discretion to relieve emergency situations on other allotments such as fire, vegetation treatments, or to allow rest in establishing an AMP grazing system elsewhere. Insure range improvement maintenance.	No new permanent roads or improved access. Maintain existing access roads.	Manage for enhancement of other resource values.	Limit to designated roads and trails.	Investigate possibility of introducing Kaibab squirrel. Manage fire for preplan- ned enhance- ment of re- source values. Write a coordinated plan integrating management of resource programs. Complete coordinated resource plans for riparian areas. Construct fire & visitor administrative site.

TABLE II - 2

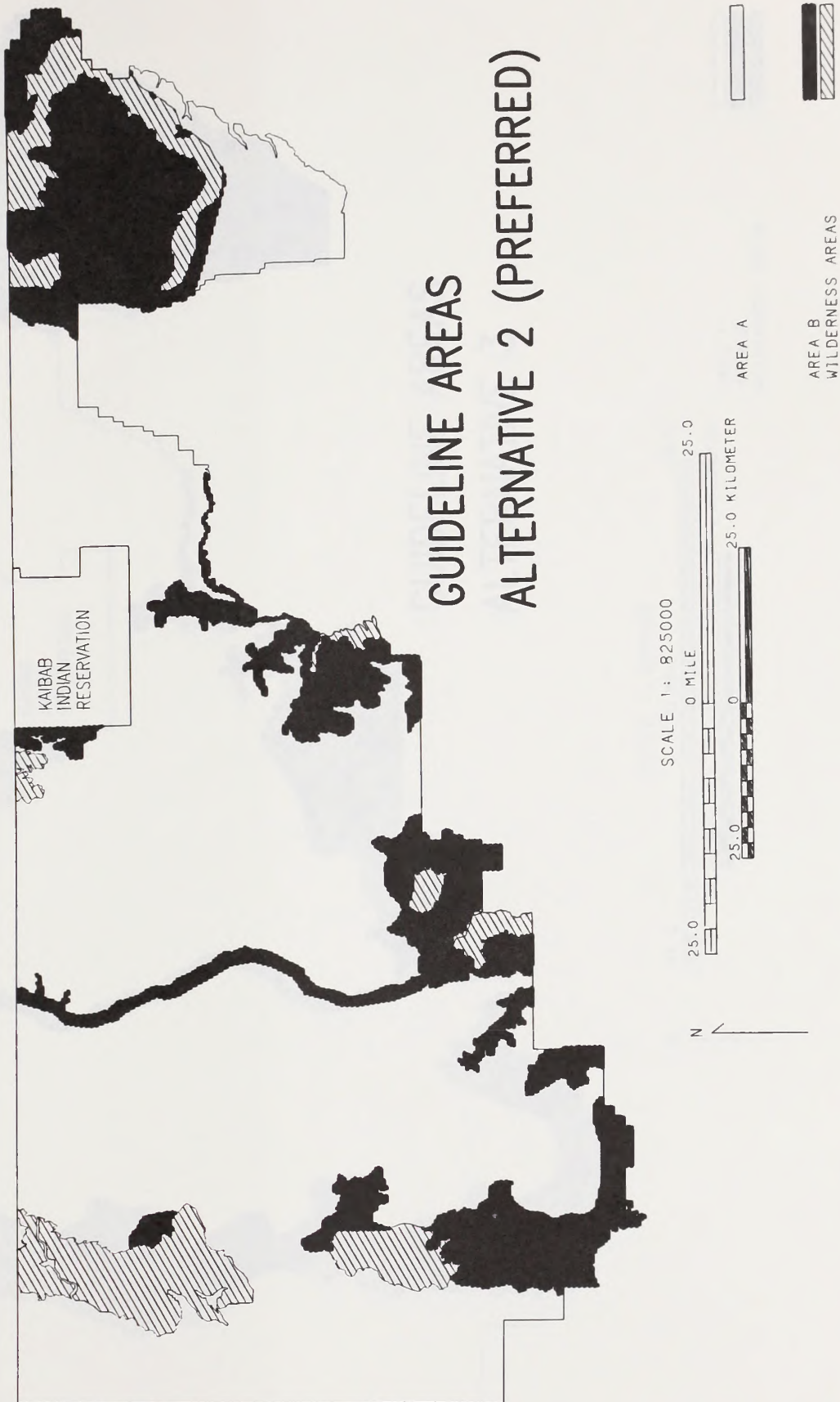
MANAGEMENT PRESCRIPTIONS FOR SPECIAL MANAGEMENT AREAS

Resource Conservation Areas (RCA), Areas of Critical Environmental Concern (ACEC), Special Recreation Management Areas (SRMA).

Site or Area	Values	Designation by Alternative	Lands	Locatable & Mineral Material Mgt	Fluid Minerals	Cultural / Recreation	Range Mgt	Roads and Access	Forest & Woodland Mgt	Off-Highway Vehicles (OHV)	Other
PARASHANT AREA (CONT.)		#3 SRMA (51,000 acres)	Same as Alternative 2.	Same as Alternative 2.	---	Improve visitor services by providing information, interpretation, facility development, maintenance and safety.	Same as Alternative 2.	Same as Alternative 2.	Same as Alternative 2.	Same as Alternative 2.	Ensure protection of unique values including ponderosa pine stands, wildlife habitat and scenic vistas. Write an activity plan to provide for remote backcountry experience.
MT. TRUMBULL AREA	Wilderness Wildlife Habitat Livestock Grazing Recreation Ponderosa Forest Cultural Resources Scenic	#2 RCA (108,000 acres)	Acquire state and private lands. No disposal of public lands. Maintain Tuweep airstrip when state section is acquired. Where feasible place linear R/Ws underground along existing roads.	Allow locatable mineral exploration and development subject to special stipulations attached to plans of operation to maintain and restore unique features and remoteness. These stipulations would be developed to address site-specific needs.	---	Recreation: No visitor facilities. Level III recreation inventory. Manage for ROS classes as shown on Map III-22. Minimum signing for public safety. Low promotion for visitor safety.	Range: Revise AMPs to be compatible with wilderness management plan. Watershed: Continue implementation of the Upper Langs Run Watershed Management Plan. Vegetation conversions to restore watershed and natural values.	Maintain roads on transportation system. No maintenance on other roads unless by authorized uses. Rehab temporarily upgraded roads to near original condition.	Forest: Maintain a viable productive forest. Manage for Forest Category C. Develop a timber management plan. Allow fire-wood cutting in burn areas. Woodlands: Designate one cutting area. Vegetative treatments to maintain natural appearance.	Limit to designated roads and trails.	Visual: Class II, III. Establish criteria for development. Wildlife: Focus management on deer, turkey, squirrel, T&E habitats. Revise HMPs to be compatible with RMP and WMP.

TABLE II - 2
MANAGEMENT PRESCRIPTIONS FOR SPECIAL MANAGEMENT AREAS
Resource Conservation Areas (RCA), Areas of Critical Environmental Concern (ACEC), Special Recreation Management Areas (SRMA).

Site or Area	Values	Designation by Alternative	Lands	Locatable & Mineral Material Mgt	Fluid Minerals	Cultural / Recreation	Range Mgt	Roads and Access	Forest & Woodland Mgt	Off-Highway Vehicles (OHV)	Other
MT. TRUMBULL AREA (CONT.)				Manage the mineral material program in accordance with the area B guidelines.		Cultural: Class II inventory. Few sites managed for public use.					
		#3 SRMA (108,000 acres)	Same as Alternative 2.	Same as Alternative 2.	---	Recreation: Low level visitor use facilities. Complete a Level II recreation inventory. Signing for interpretation, information, and safety. Moderate promotion for visitor use. Cultural: Class II inventory. Assign use categories. Interpret at least one site for public use.	Range: Same as Alternative 2. Watershed: Take action to reduce head cutting, channel erosion, and high sheet flow areas.	Same as Alternative 2.	Same as Alternative 2.	Same as Alternative 2.	Wildlife: Same as Alternative 2.
		#4 NO SPECIAL DESIGNATION						Road up-grades will be allowed. Maintenance will be at a higher level than Alternative 2.	Manage for Forest Category B. Develop a timber management plan. Allow fire-wood cutting in slash and burned areas.	Limit to existing roads and trails.	Visual: Maintain existing inventory classes. Wildlife: Deer habitat management is favored over turkey and squirrel



1000
100

1000
100

1000
100

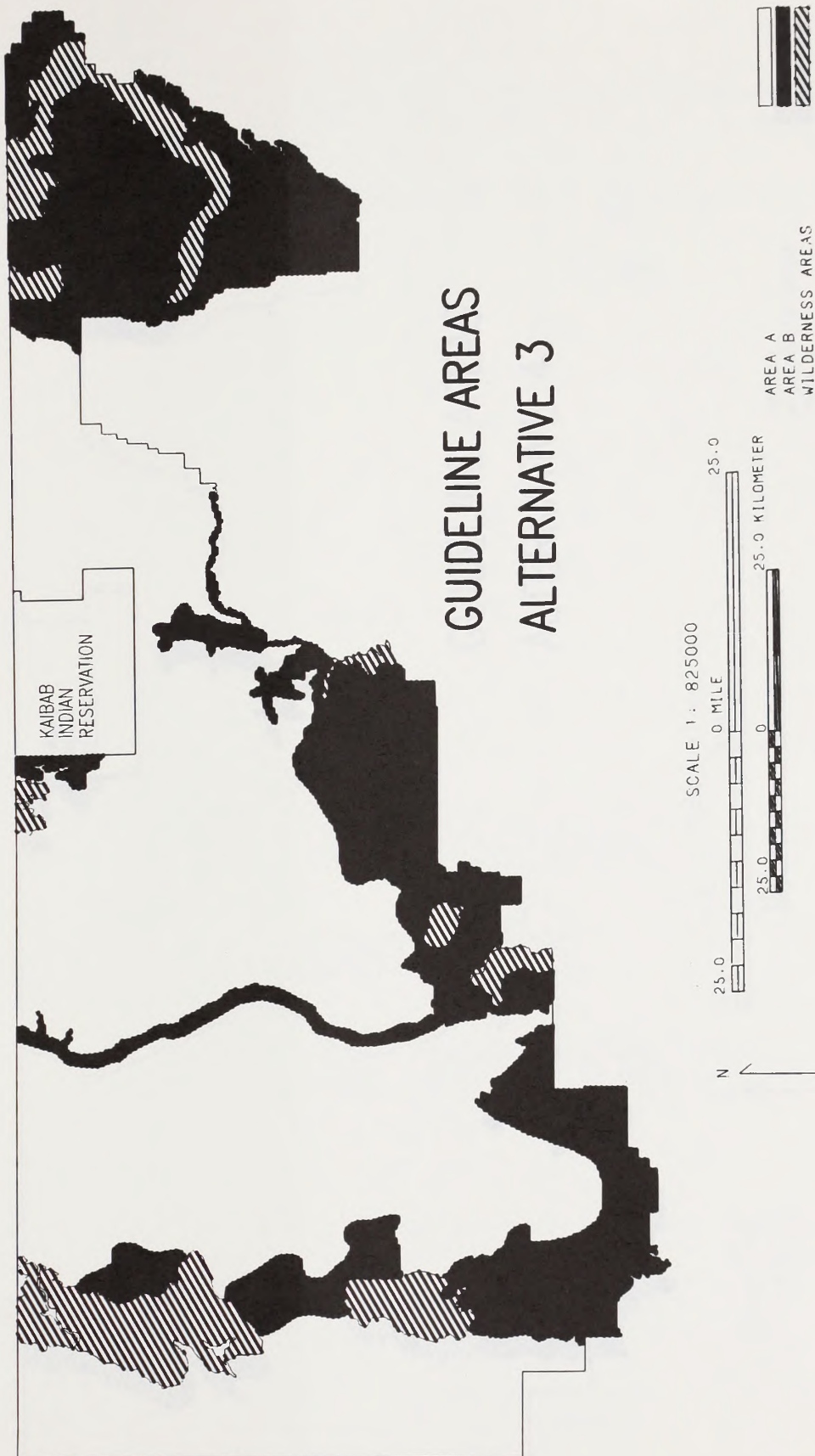
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1000
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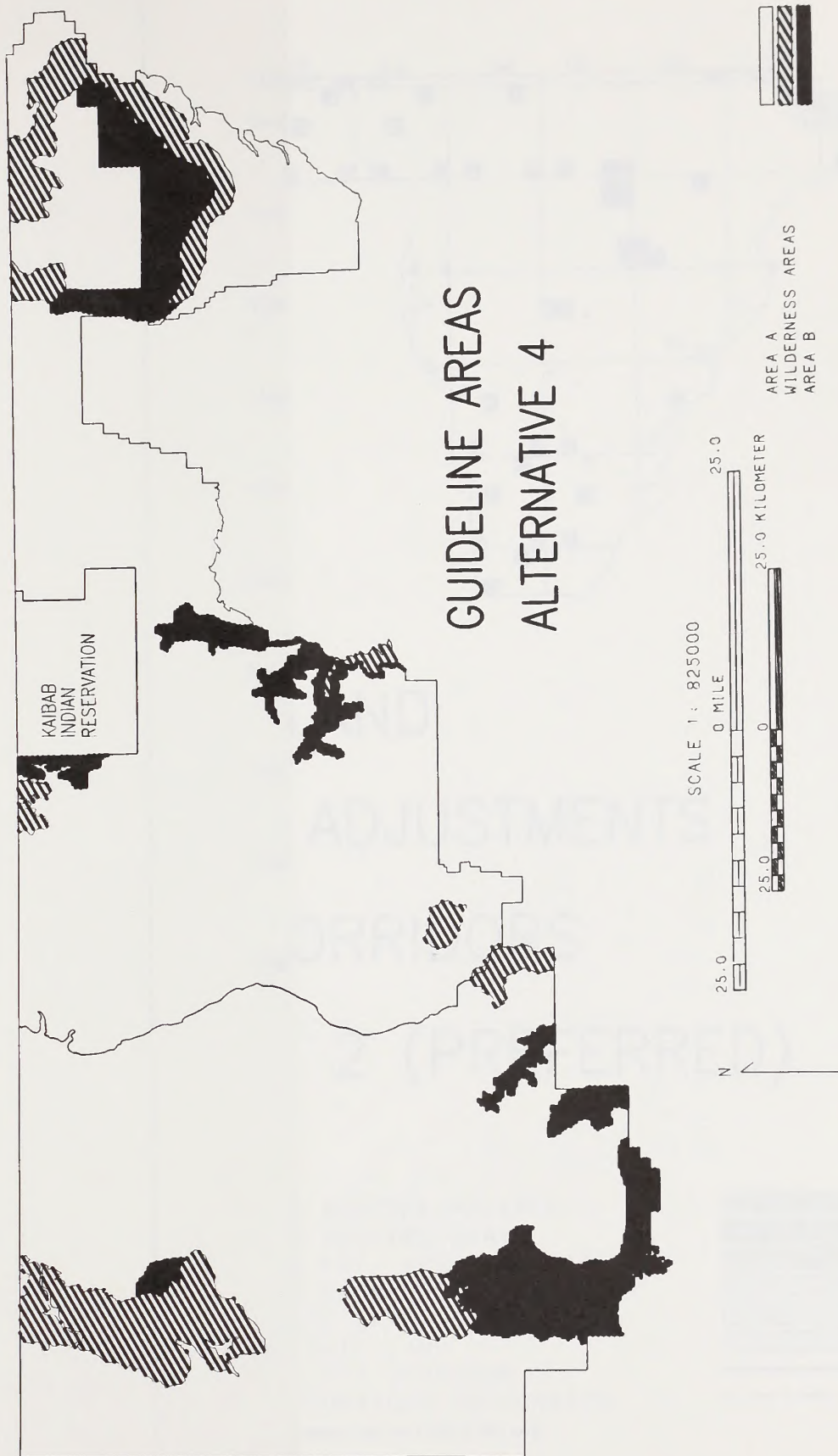
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100

WILSONIAN 5 (BREEDING)
CONJECTURE 1982





Map II - 2





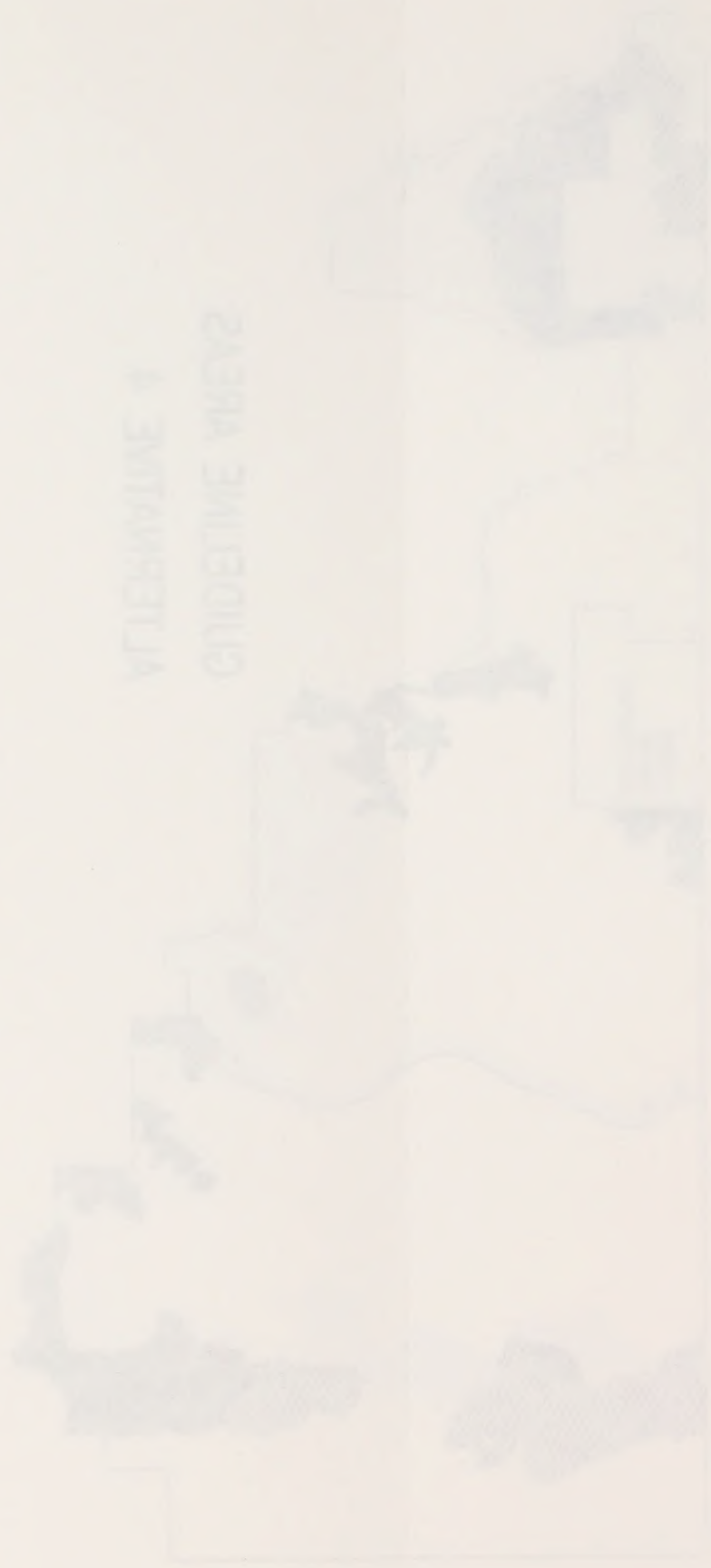
1972-1973
1974-1975

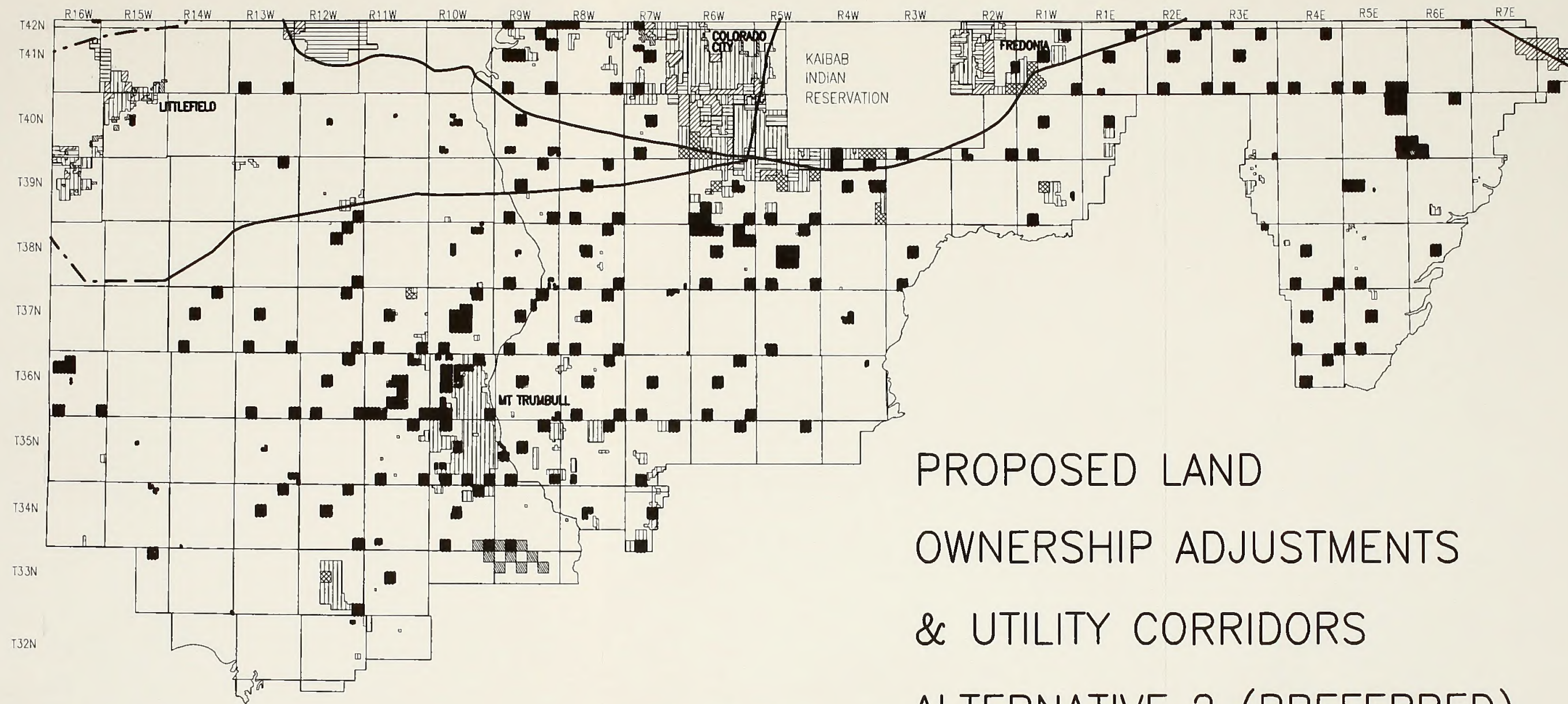
1976-1977
1978-1979

1980-1981
1982-1983

1984-1985

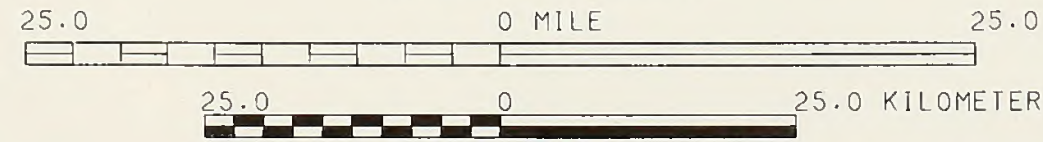
ALTERNATIVE 4 CRITICAL AREAS



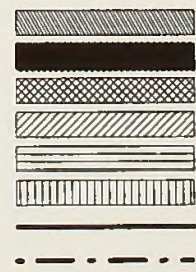


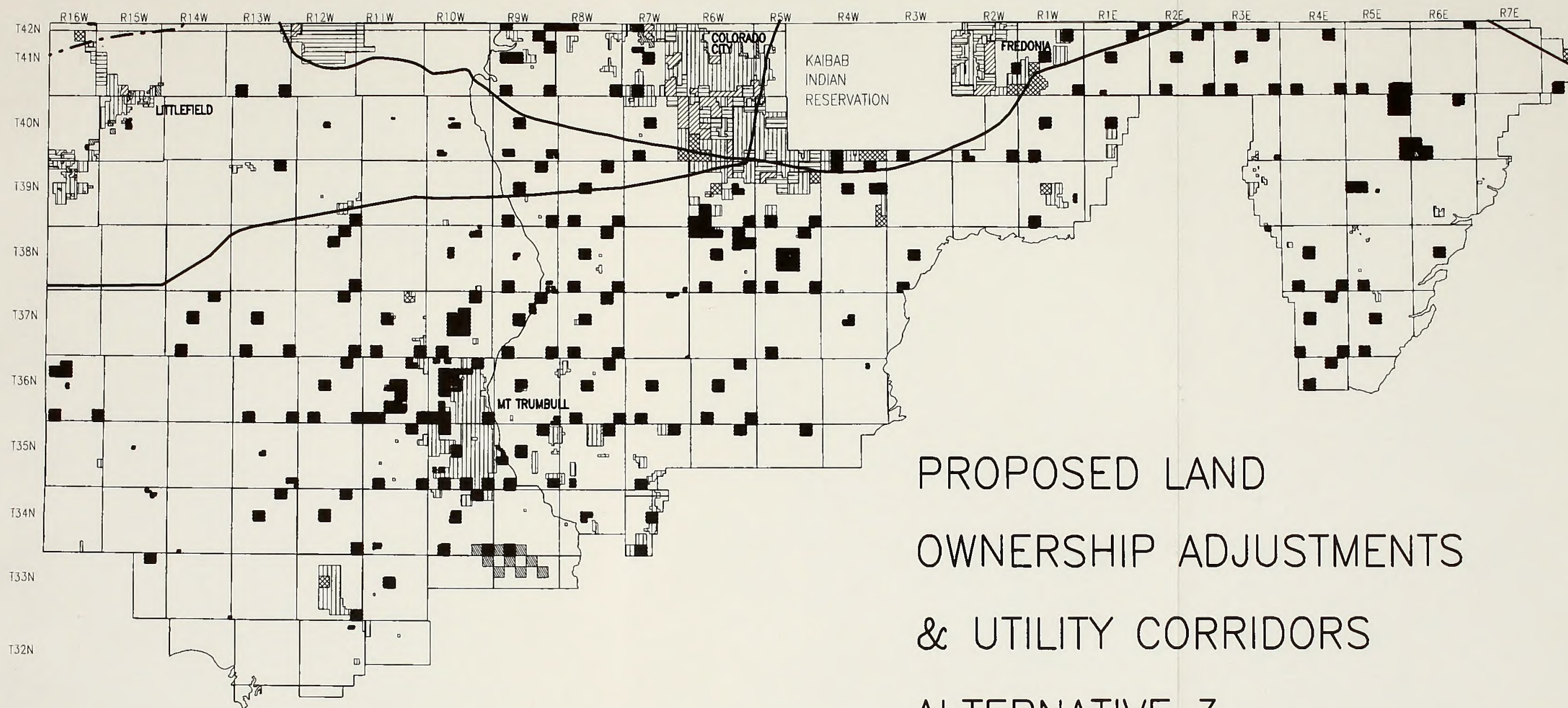
PROPOSED LAND OWNERSHIP ADJUSTMENTS & UTILITY CORRIDORS ALTERNATIVE 2 (PREFERRED)

SCALE 1: 500000



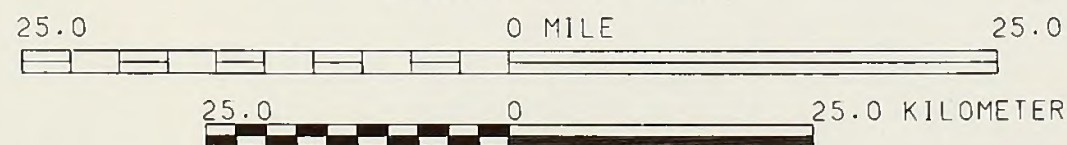
- BLM ACQUIRE/PRIVATE
 - BLM ACQUIRE/STATE
 - BLM POT. ACQUIRE/STATE
 - BLM EXCHANGE OR SALE
 - STATE LAND
 - PRIVATE LAND
 - UTILITY CORRIDOR
 - NO CORRIDOR DESIGNATED
- ALIGNMENTS MADE ON A CASE BY CASE BASIS



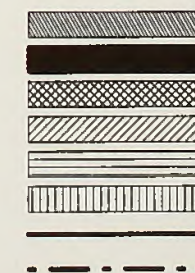


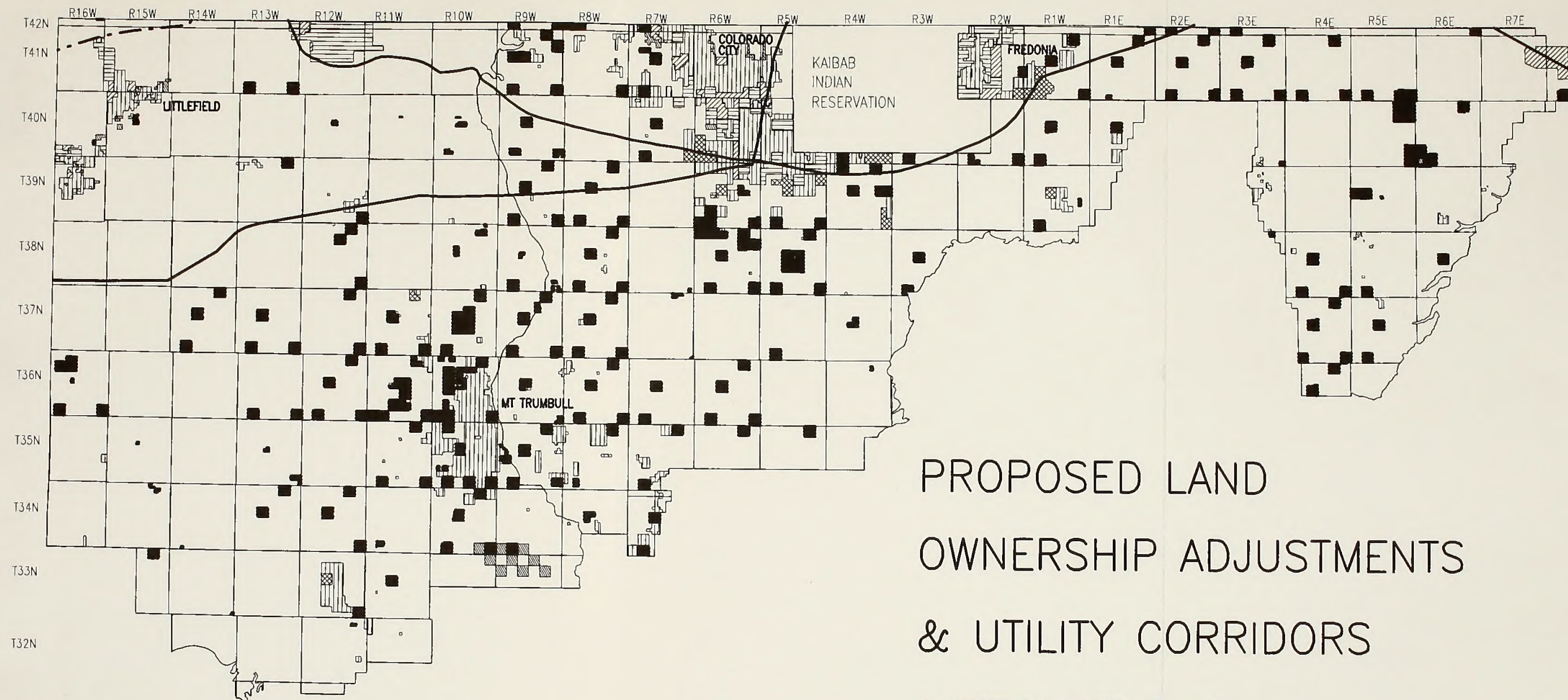
PROPOSED LAND OWNERSHIP ADJUSTMENTS & UTILITY CORRIDORS ALTERNATIVE 3

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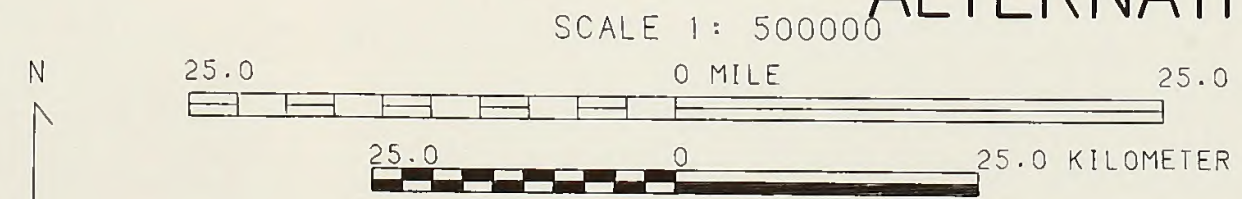


BLM ACQUIRE/PRIVATE
BLM ACQUIRE/STATE
BLM POT. ACQUIRE/STATE
BLM EXCHANGE OR SALE
STATE LAND
PRIVATE LAND
UTILITY CORRIDOR
UNDEFINED (TDRTOISE AREA)



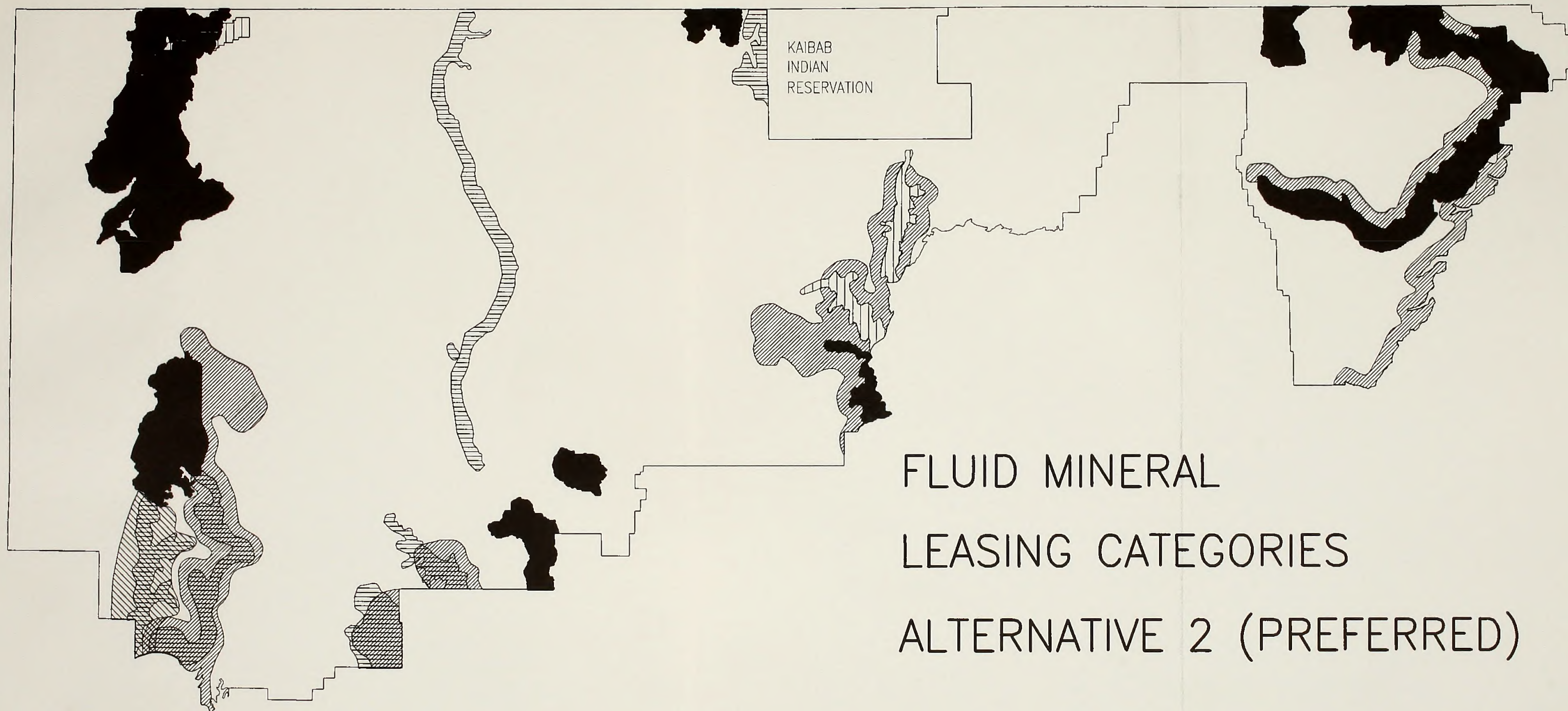


PROPOSED LAND
OWNERSHIP ADJUSTMENTS
& UTILITY CORRIDORS
ALTERNATIVE 4

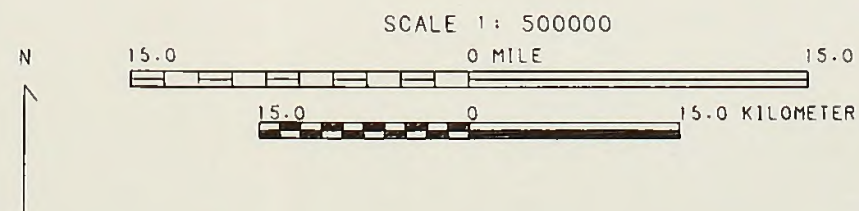


- BLM ACQUIRE/PRIVATE
- BLM ACQUIRE/STATE
- BLM POT. ACQUIRE/STATE
- BLM EXCHANGE OR SALE
- STATE LAND
- PRIVATE LAND
- UTILITY CORRIDOR
- UNDEFINED (TORTOISE AREA)



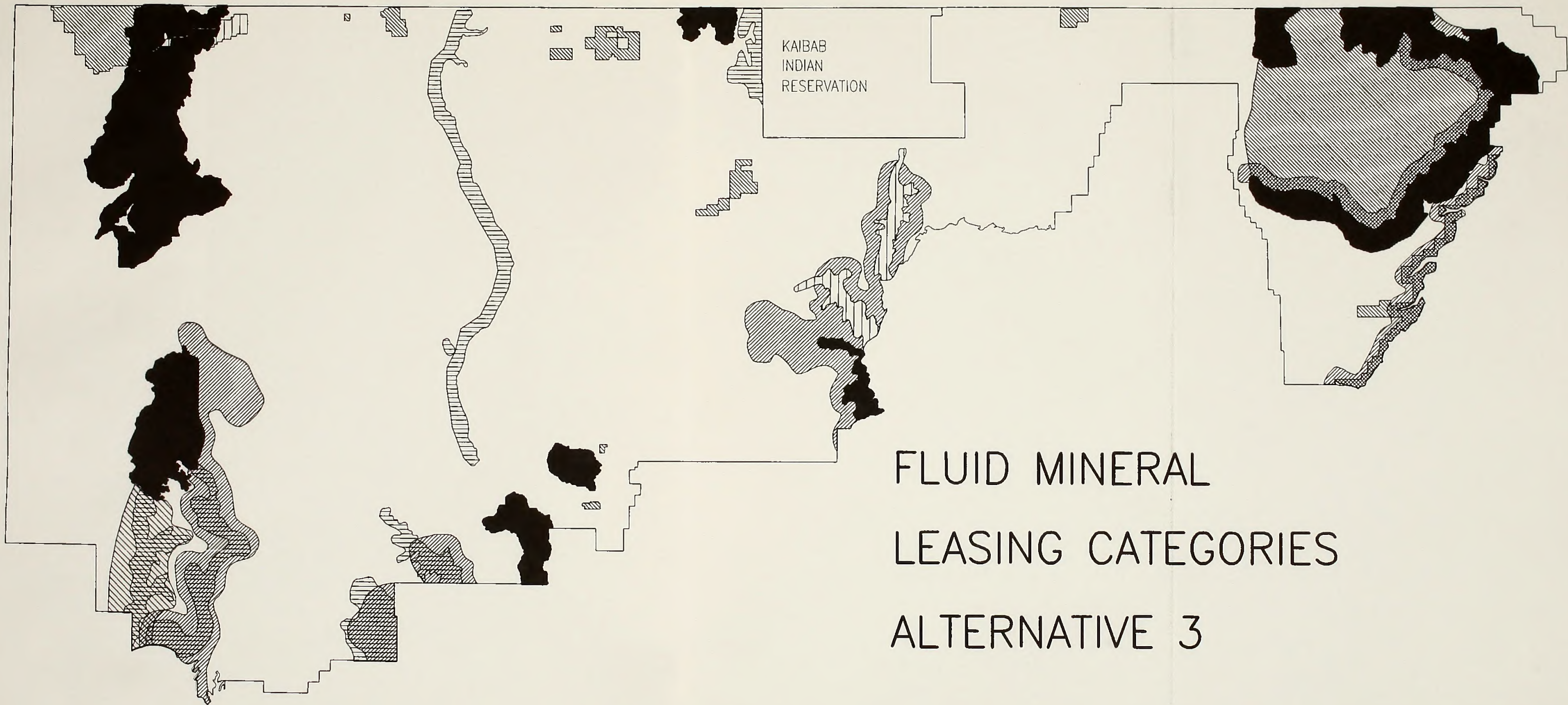


FLUID MINERAL LEASING CATEGORIES ALTERNATIVE 2 (PREFERRED)



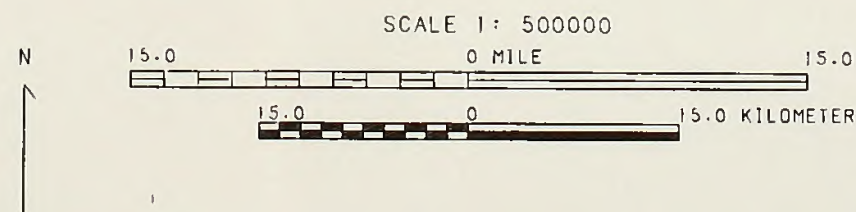
FEATURE	CATEGORY	RESTRICTION	ACREAGE
PEREGRINE	B	OPEN 8/1-3/1	230,000
BIGHORN SH	B	OPEN 6/1-11/30	39,900
VISUAL	C	NSO	23,400
VISUAL	C	NSO SLOPES > 30%	114,400
WILDERNESS	O	WITHDRAWAL	265,600





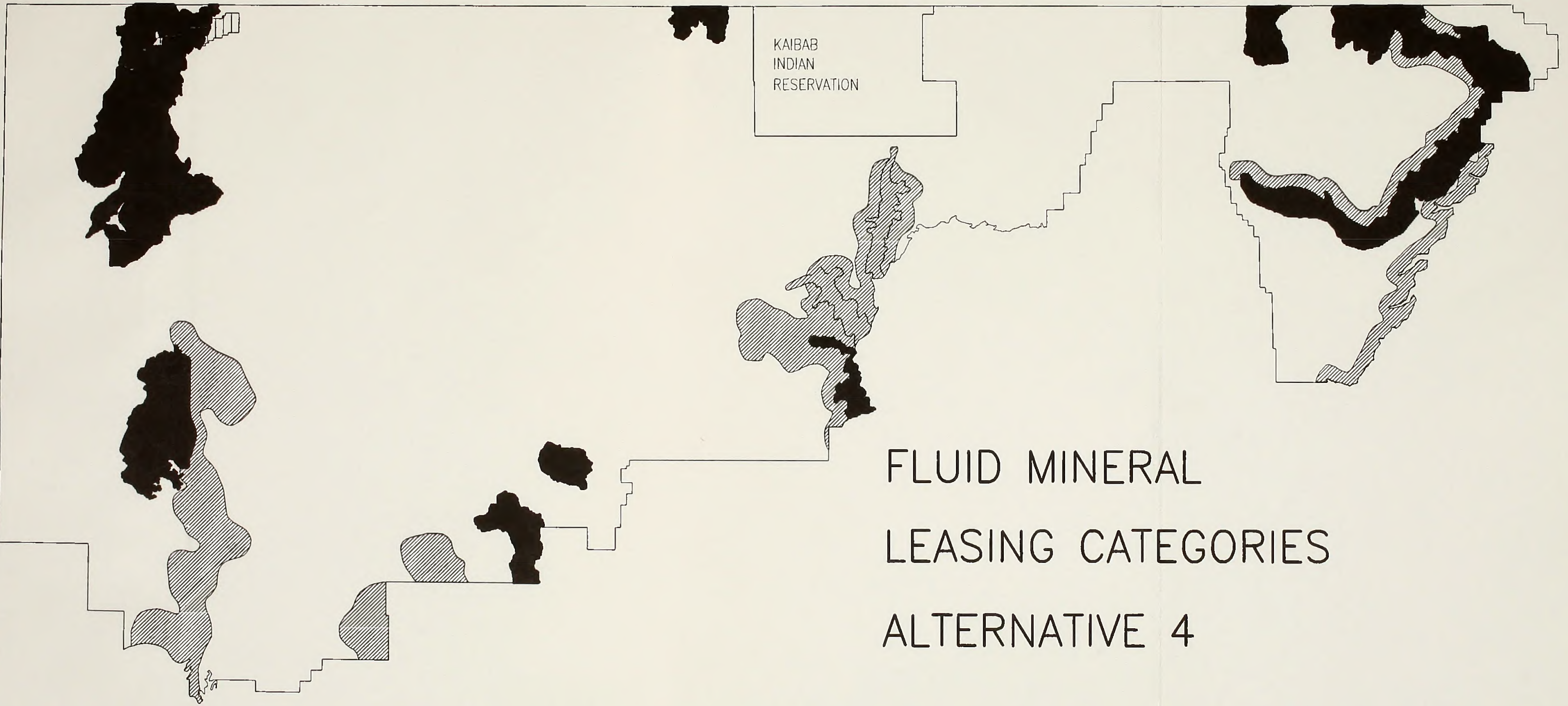
FLUID MINERAL LEASING CATEGORIES ALTERNATIVE 3

ALT3ACECFM ALL
PEP250KF ALL
BHP250 ALL
VRM25014 ALL
TVRM25015 ALL
AZWIP ALL
AZBOPF ALL



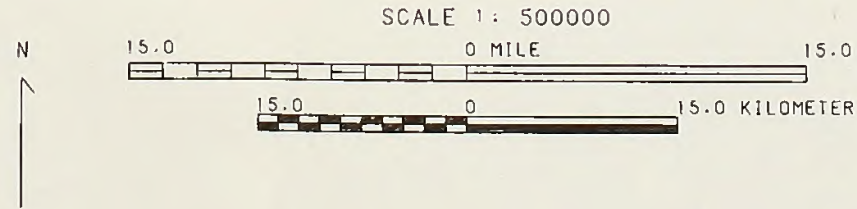
FEATURE	CATEGORY	RESTRICTION	ACREAGE
ACEC's, SRMA	C	NSO	289,000
PEREGRINE	B	OPEN 8/1-3/1	230,000
BIGHORN SH	B	OPEN 6/1-11/30	39,900
VISUAL	C	NSO	20,100
VISUAL	C	NSO SLOPES > 30%	114,400
WILDERNESS	D	WITHDRAWAL	265,600





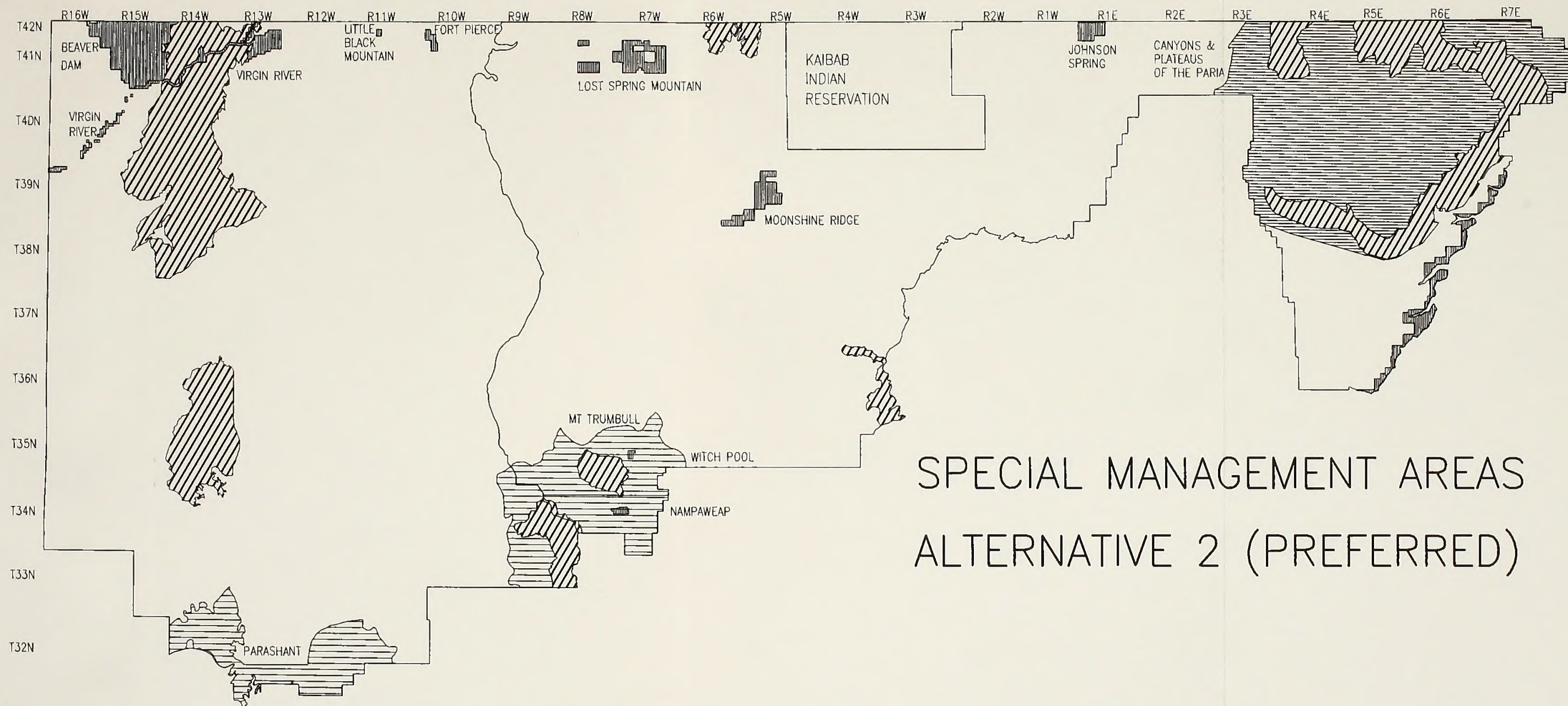
KAIBAB
INDIAN
RESERVATION

FLUID MINERAL LEASING CATEGORIES ALTERNATIVE 4

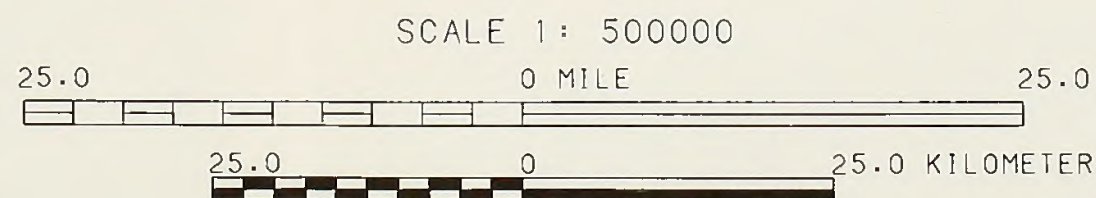


FEATURE	CATEGORY	RESTRICTION	ACREAGE
PEREGRINE	B	OPEN 8/1-3/11	250,100
VISUAL	C	NSO	3,300
WILDERNESS	D	WITHDRAWAL	265,600

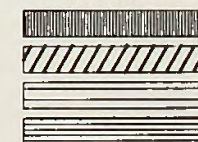


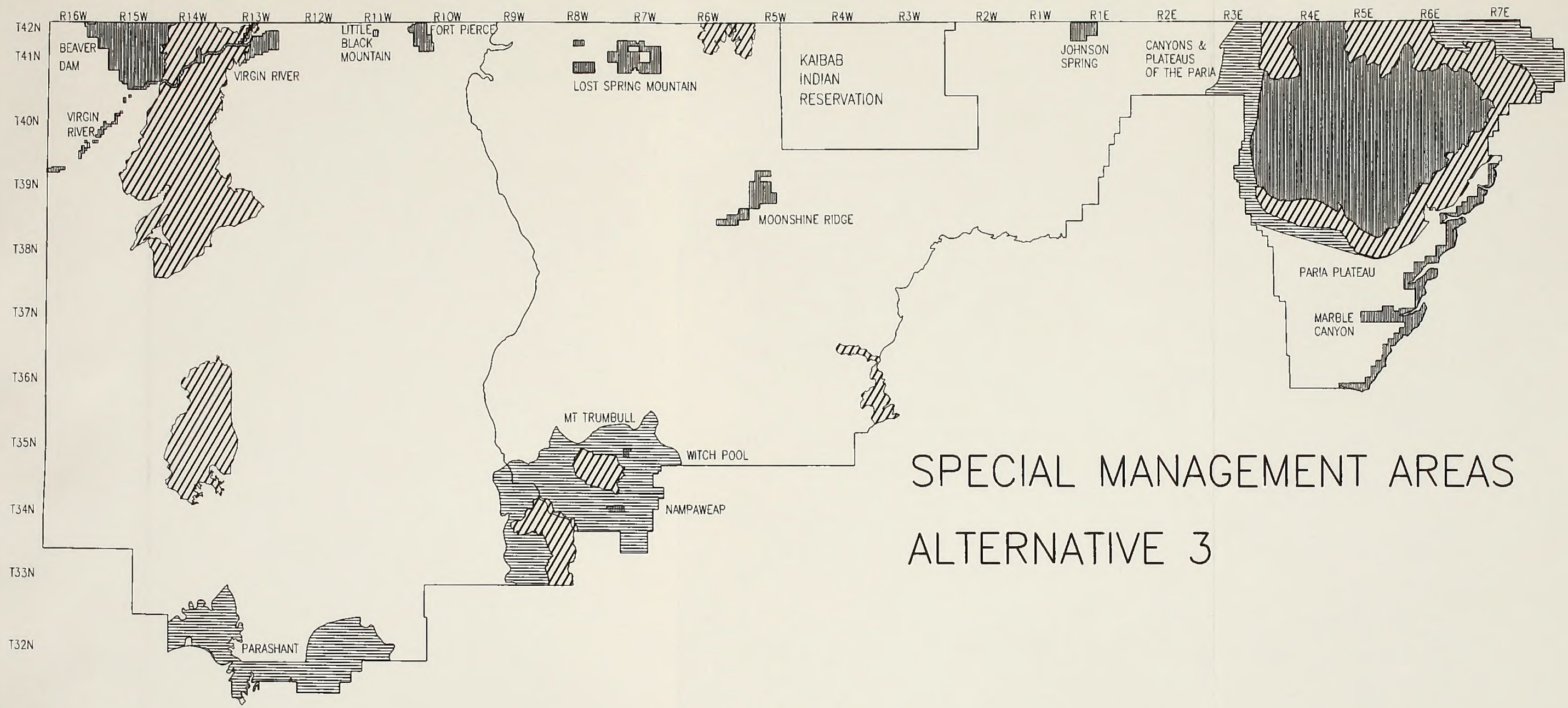


SPECIAL MANAGEMENT AREAS ALTERNATIVE 2 (PREFERRED)

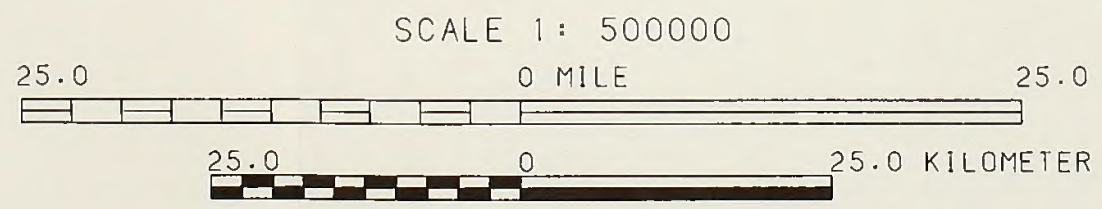


ACEC
WILDERNESS
RCA
SRMA



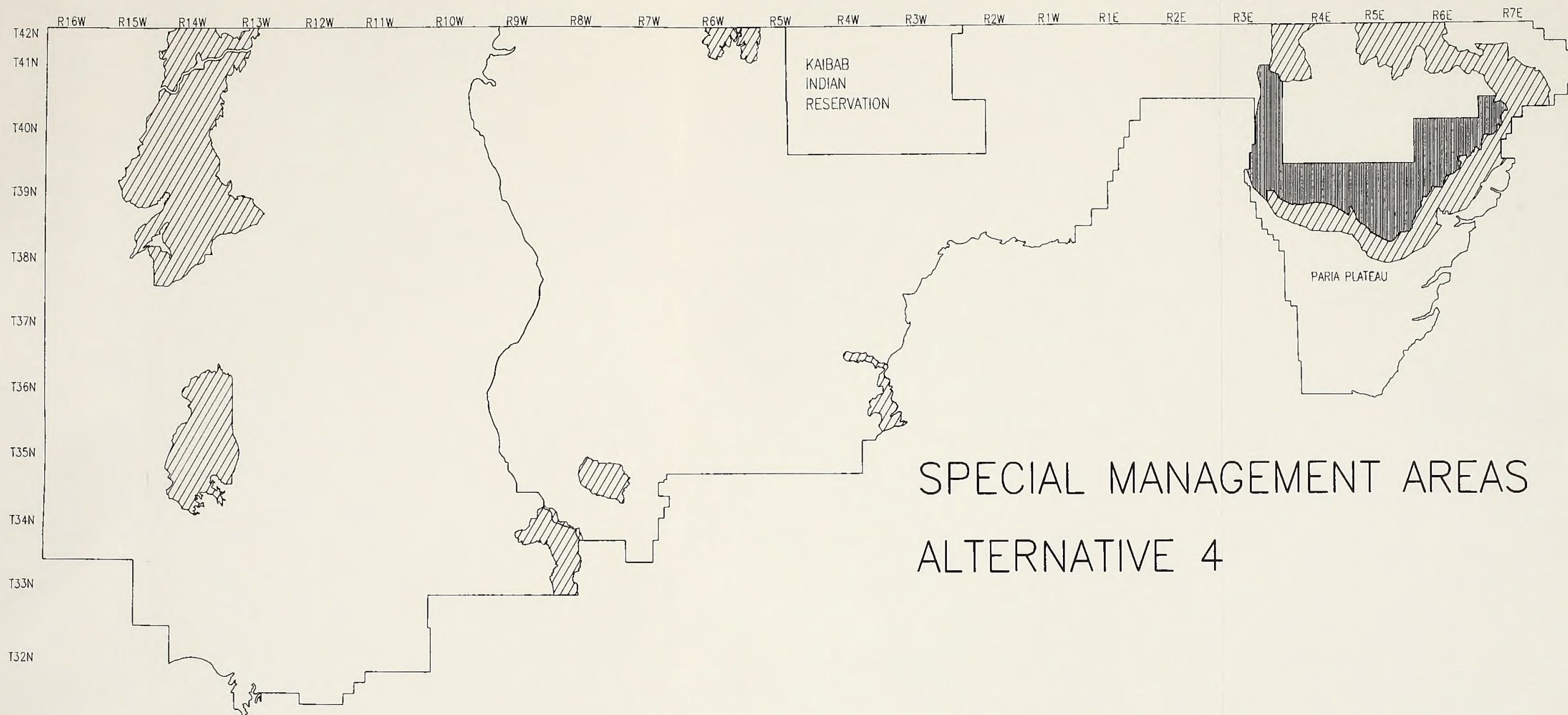


SPECIAL MANAGEMENT AREAS ALTERNATIVE 3

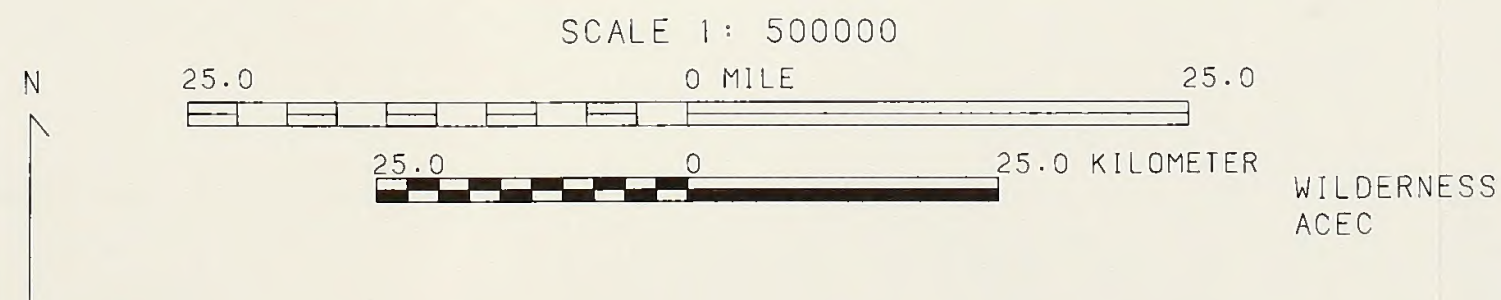


ACEC
WILDERNESS
SRMA

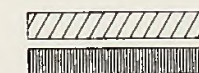


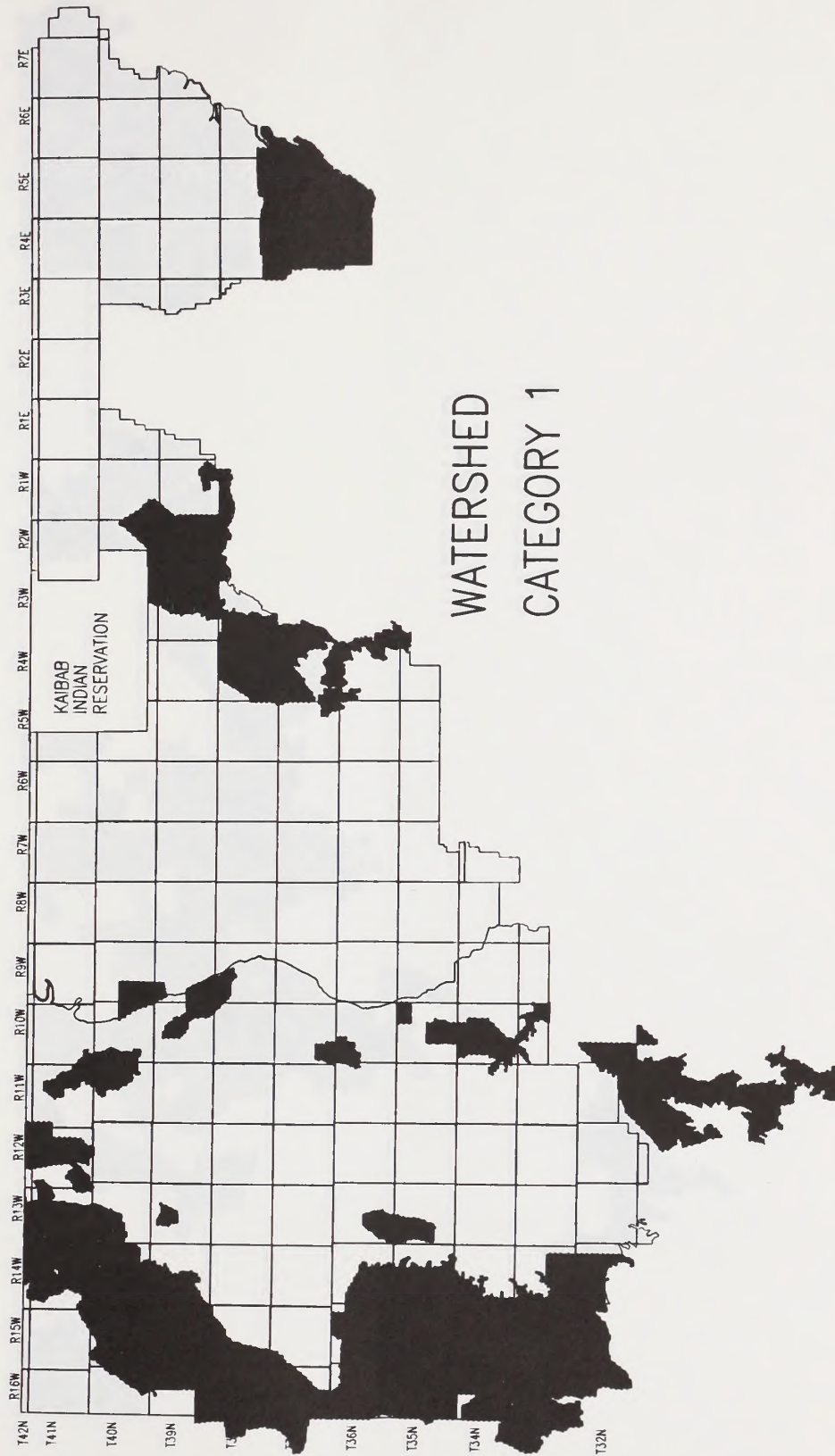


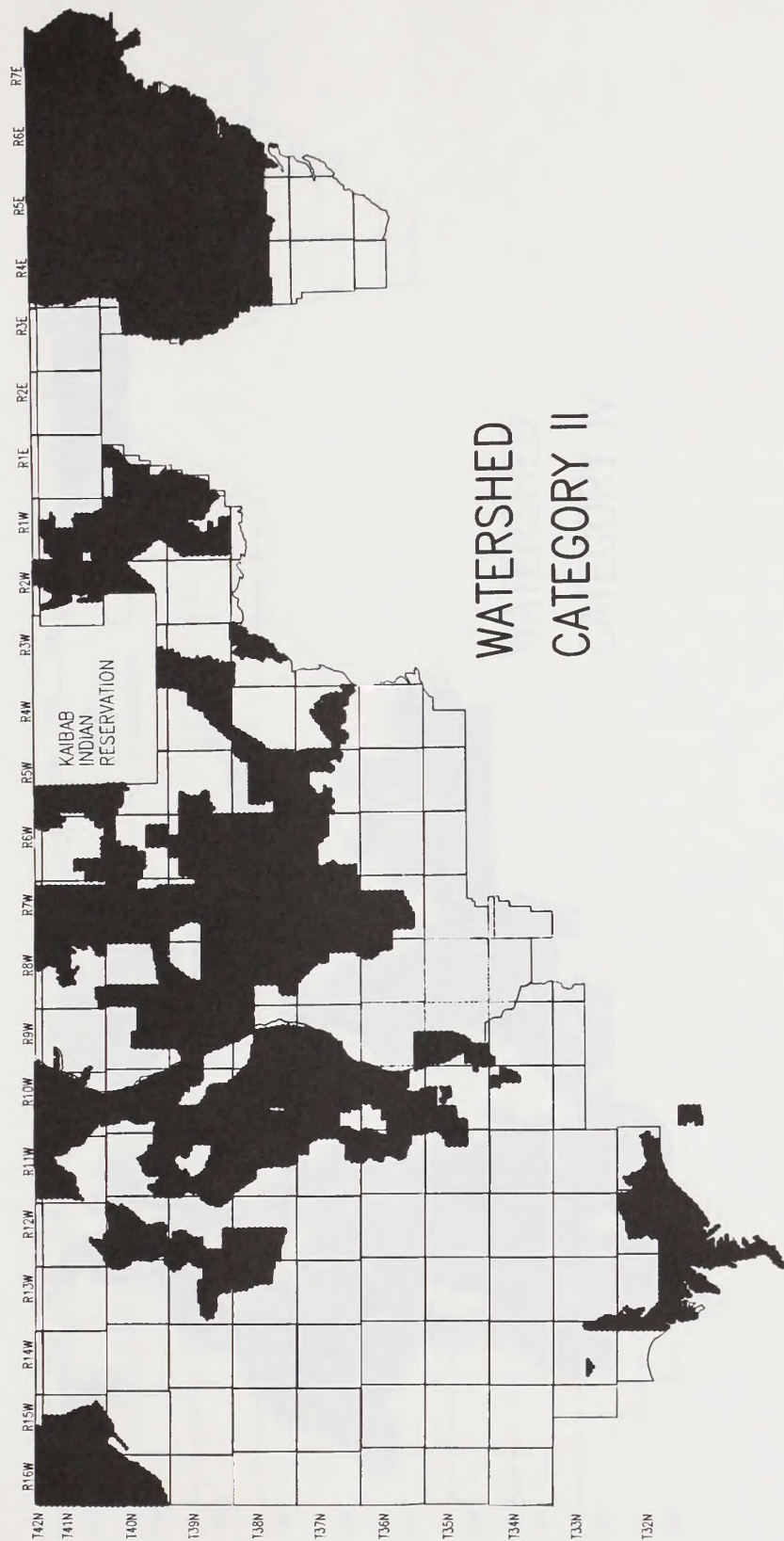
SPECIAL MANAGEMENT AREAS ALTERNATIVE 4



WILDERNESS
ACEC







WATERSHED CATEGORY II

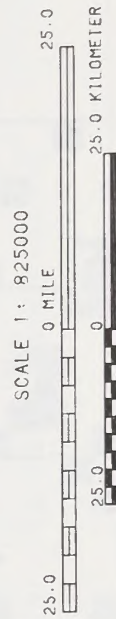
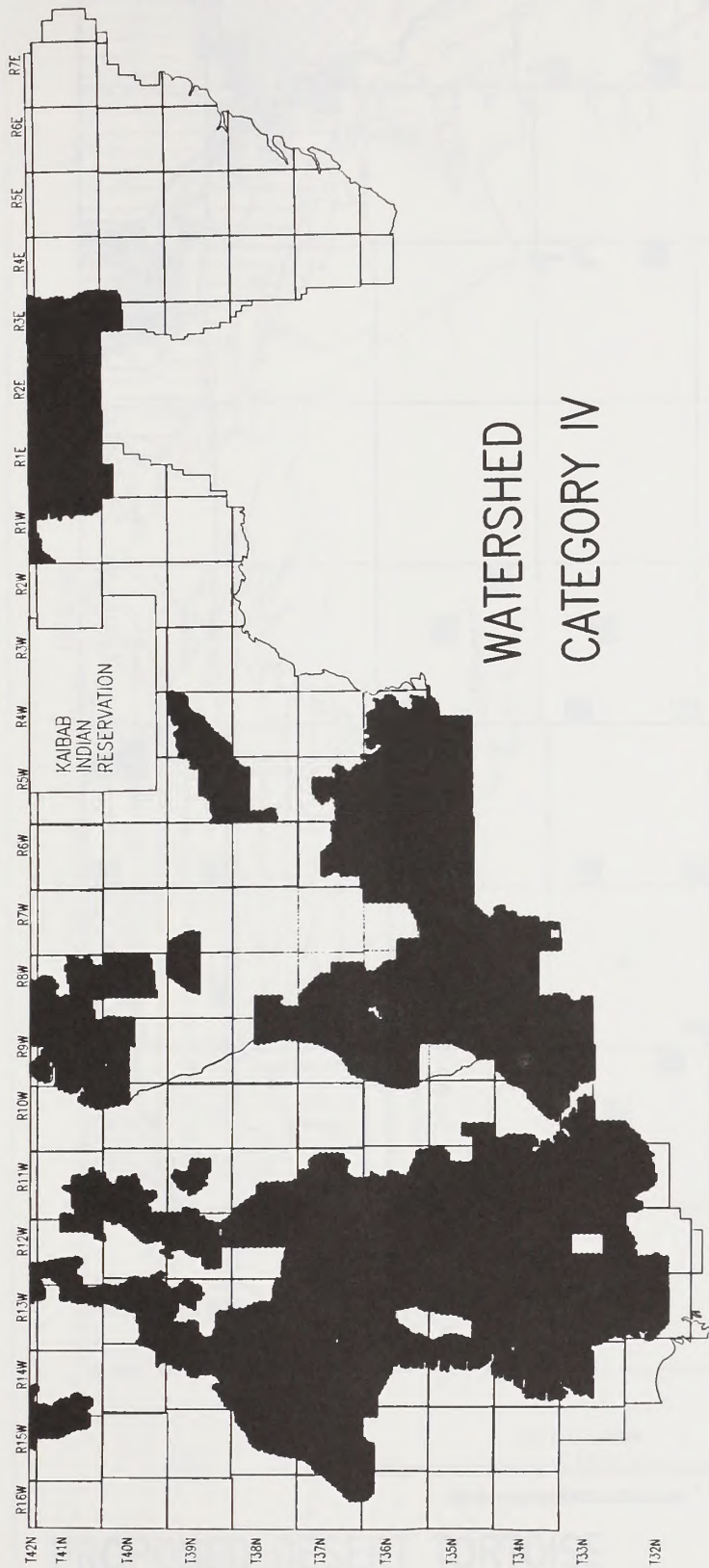
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25.0 0 MILE 25.0
25.0 0 KILOMETER

COPY 11

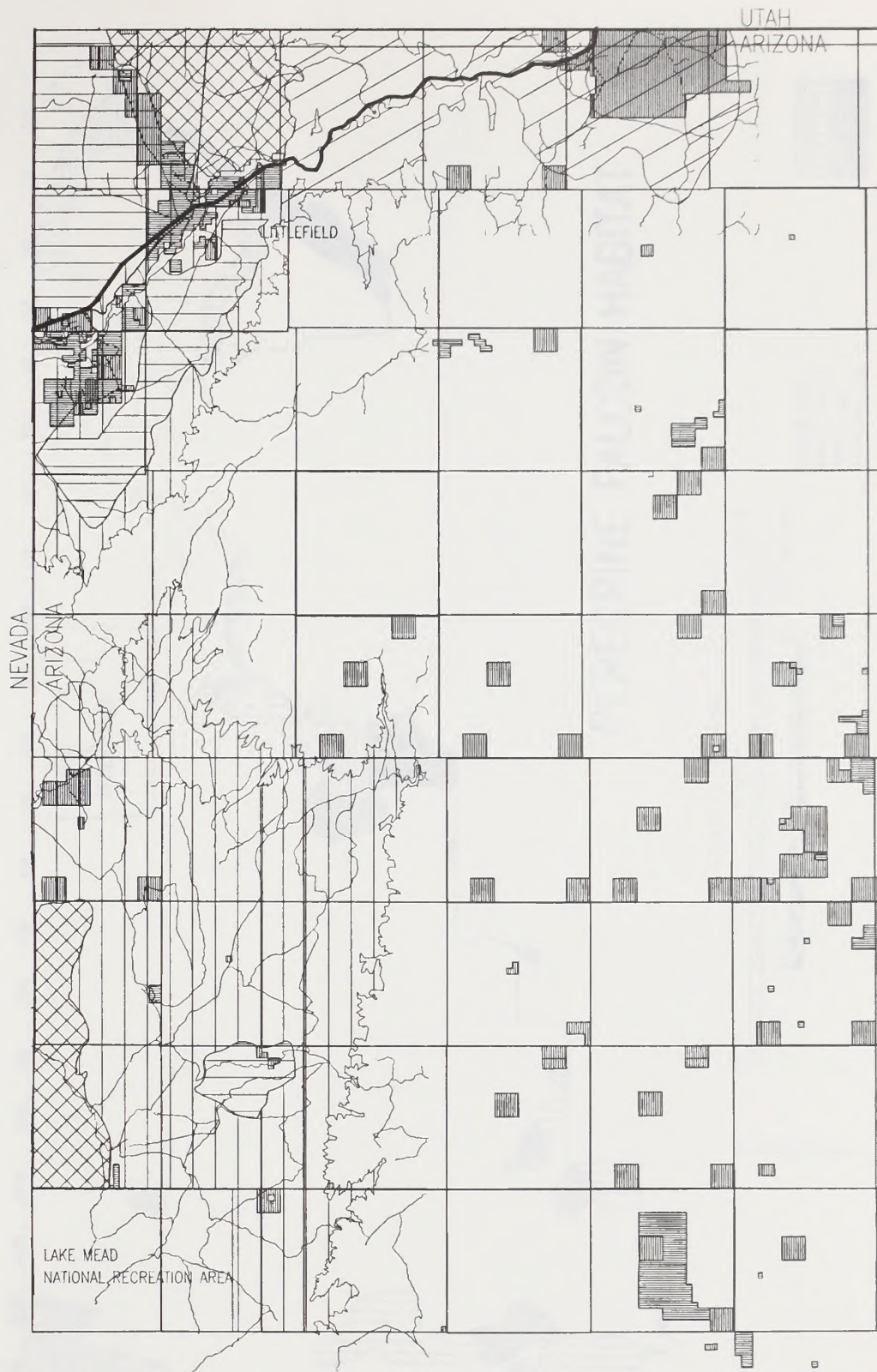
1950

1950

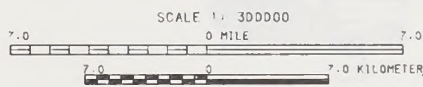




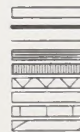
CATEGORY IV

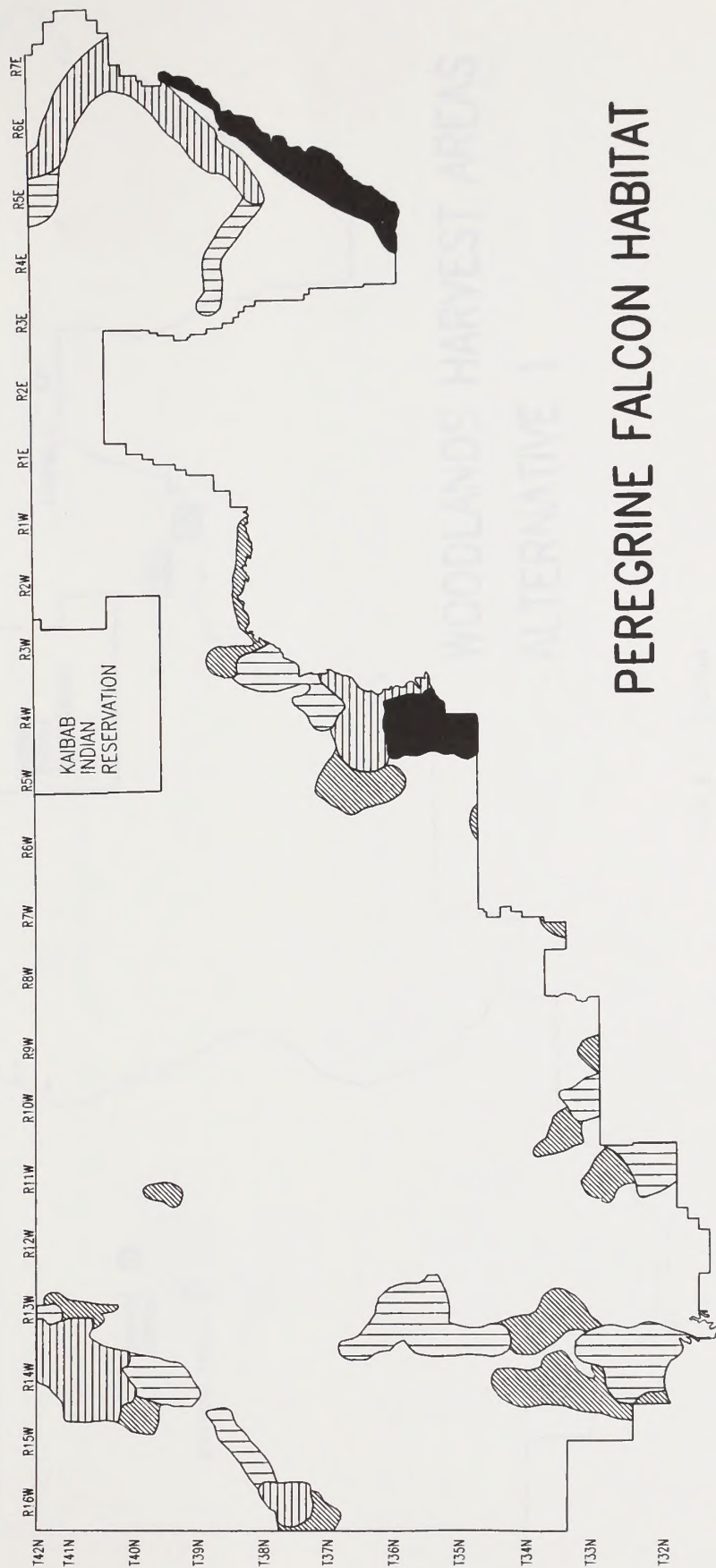


PROPOSED DESERT TORTOISE HABITAT CATEGORIZATION



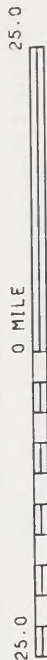
TOWNSHIP & RANGE LINES
INTERSTATE 15
ROADS
PRIVATE LANDS
STATE LANDS
CATEGORY 1
CATEGORY 2
CATEGORY 3
POTENTIAL HABITAT



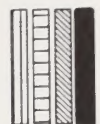


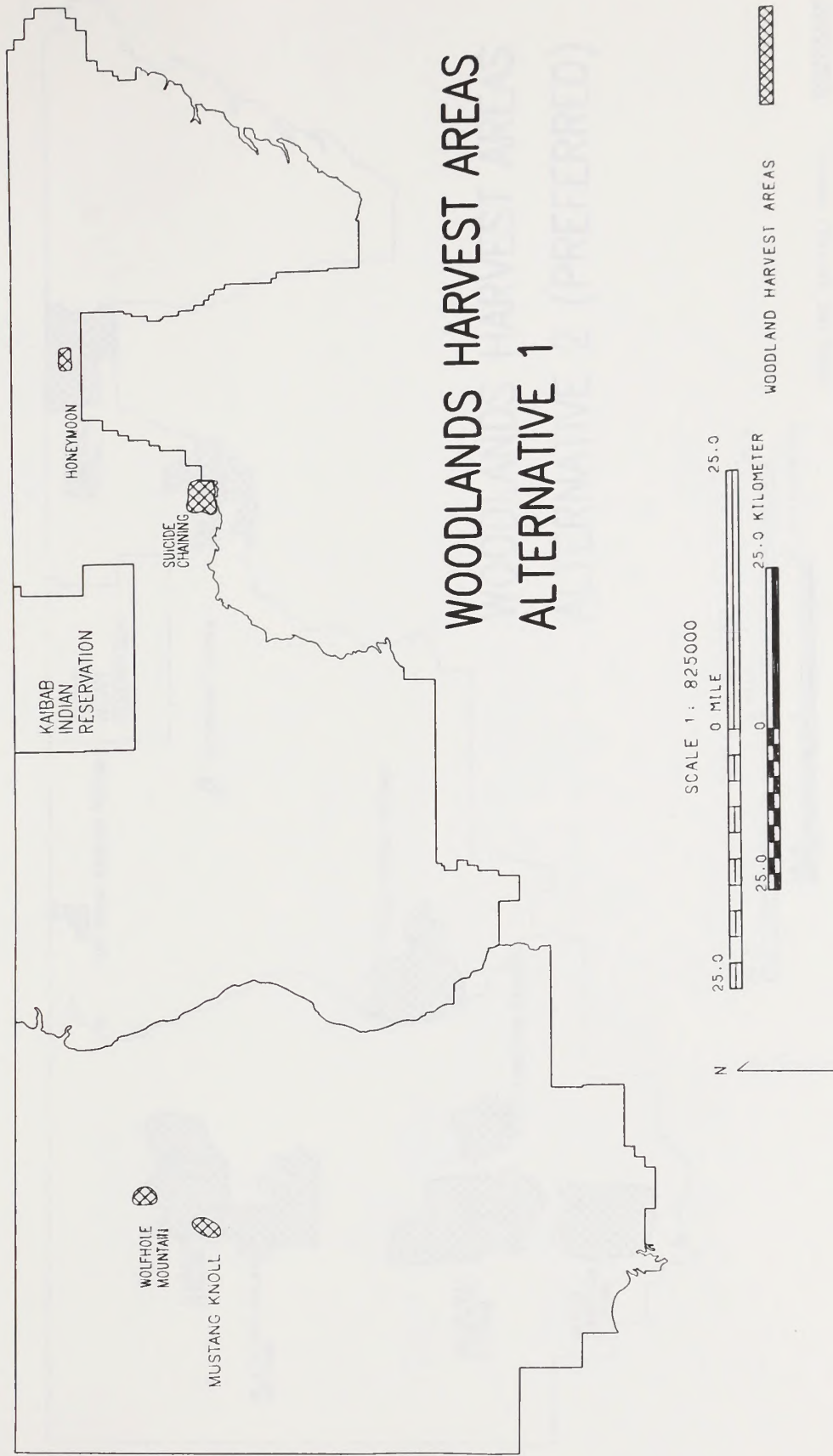
PEREGRINE FALCON HABITAT

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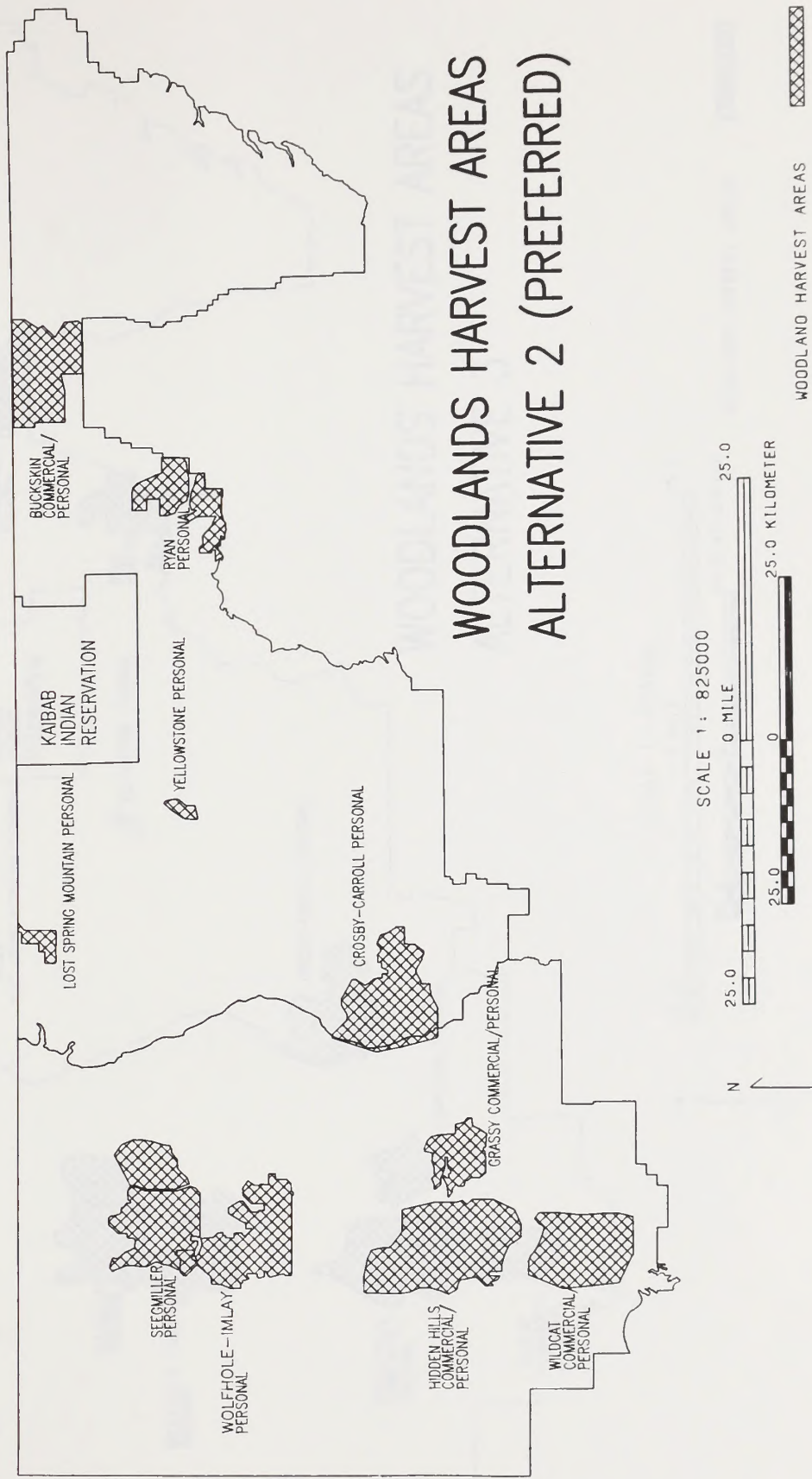


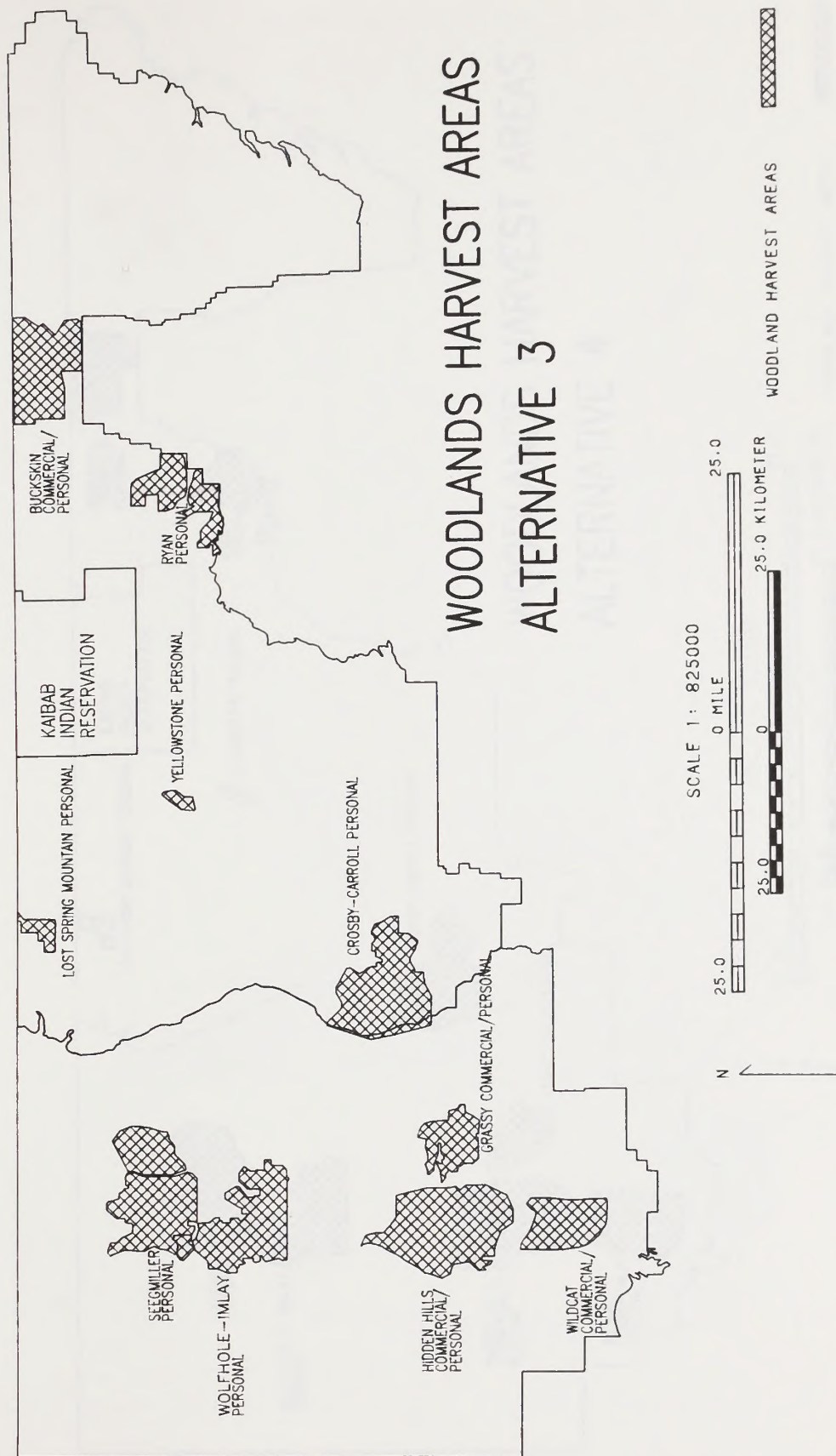
SUPERIOR
ACCEPTABLE
MARGINAL
HISTORICAL





Map II - 18





Map II - 20

SEECMILLER PERSONAL

WOLF HOLE - IMLAY PERSONAL

LOST SPRING MOUNTAIN PERSONAL

KAIBAB INDIAN RESERVATION

BUCKSKIN COMMERCIAL/PERSONAL

RYAN PERSONAL

YELLOWSTONE PERSONAL

CROSBY - CARROLL PERSONAL

GRASSY COMMERCIAL/PERSONAL

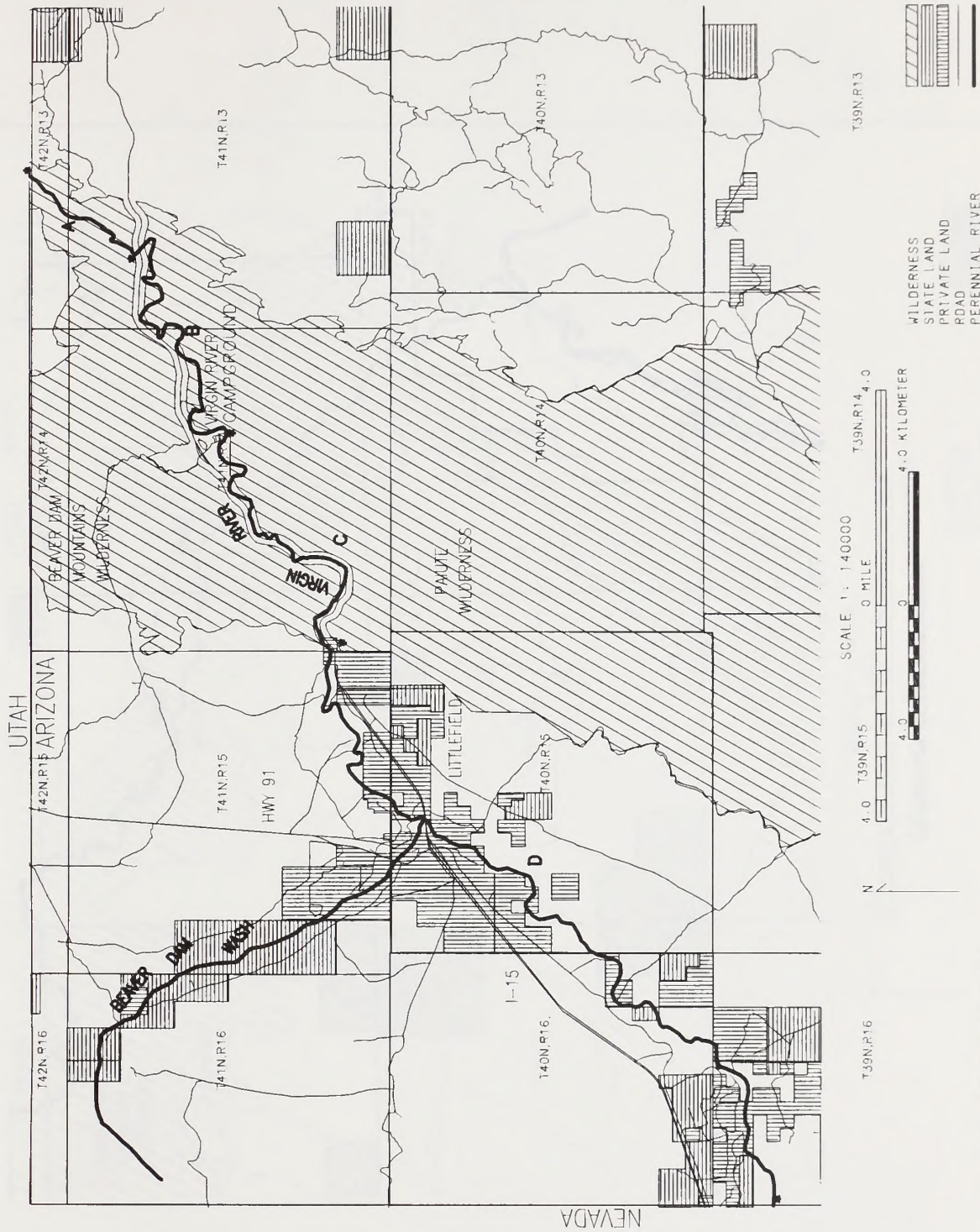
HIDDEN HILLS COMMERCIAL/PERSONAL

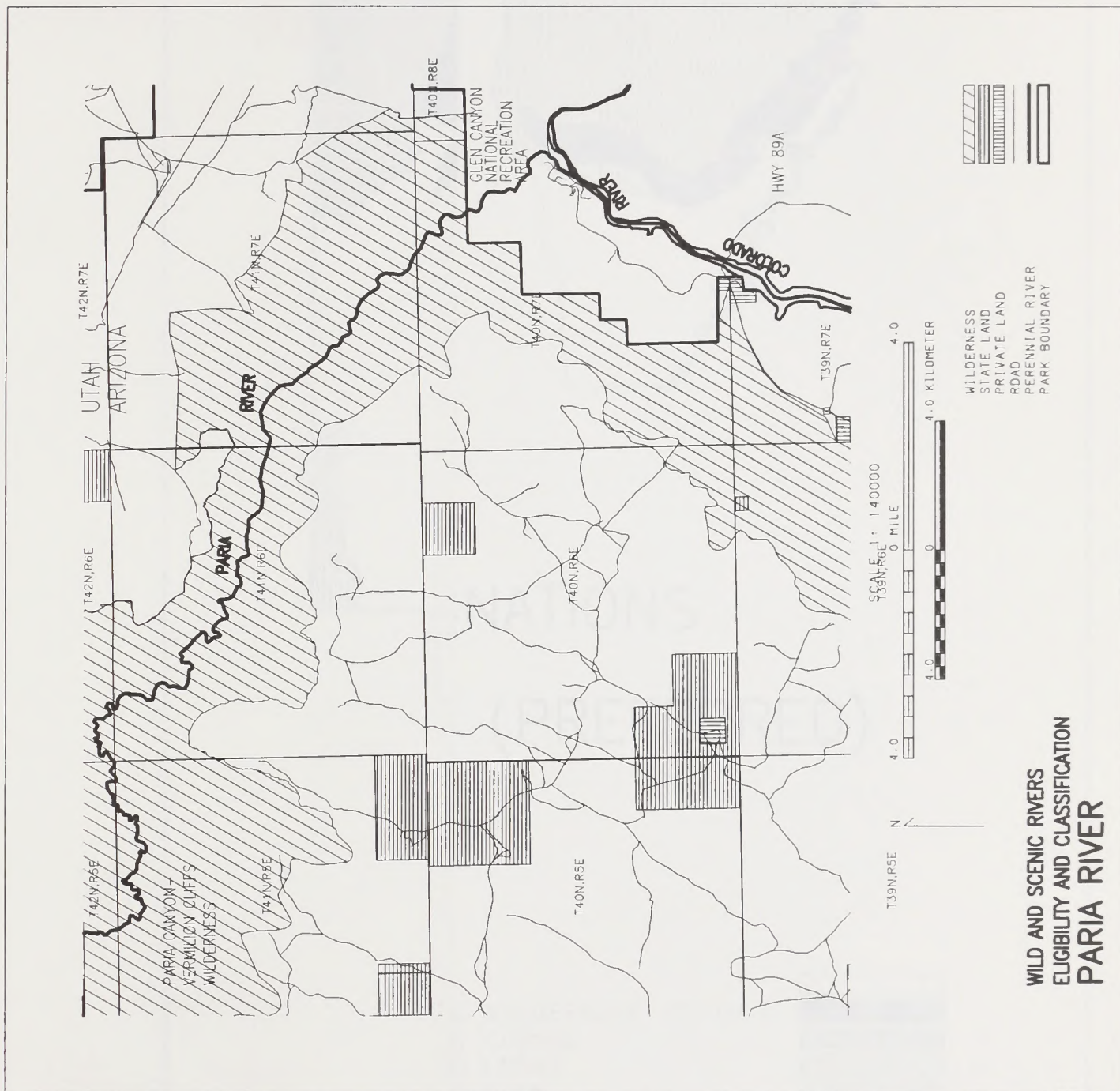
WILDCAT COMMERCIAL/PERSONAL

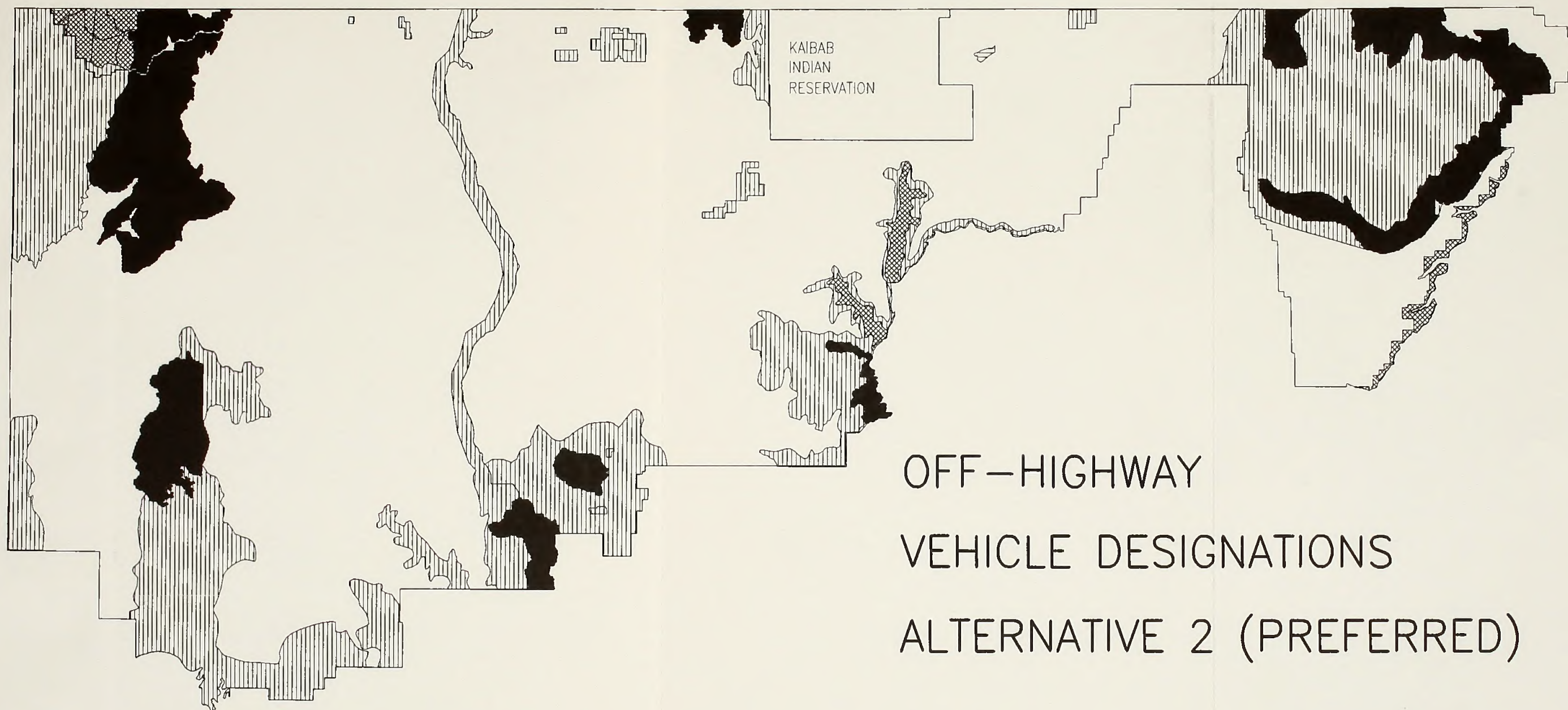
WOODLANDS HARVEST AREAS
ALTERNATIVE 4

A horizontal scale bar with two units. The top part is labeled '0 MILE' and '25.0'. The bottom part is labeled '0' and '25.0 KILOMETER'. The bar is divided into segments, with the first segment being a different pattern (checkered) than the others.

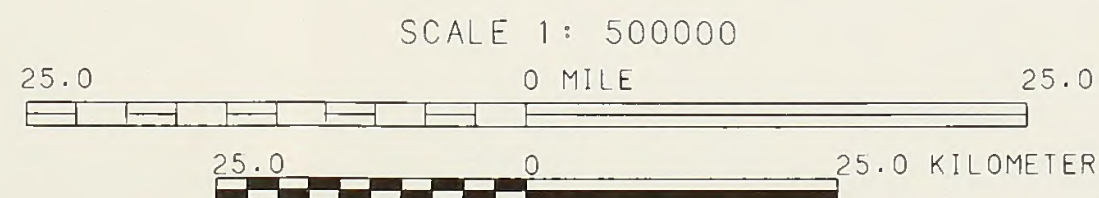
WOODLAND HARVEST AREAS





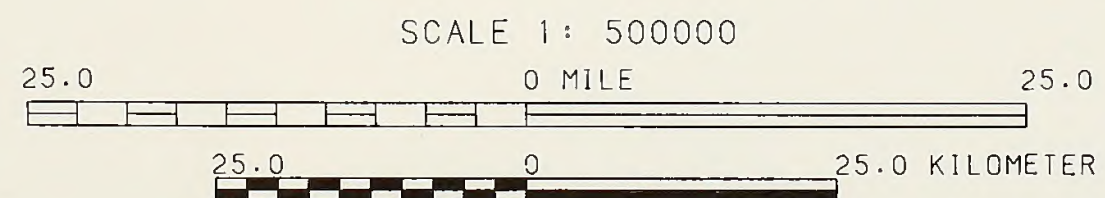
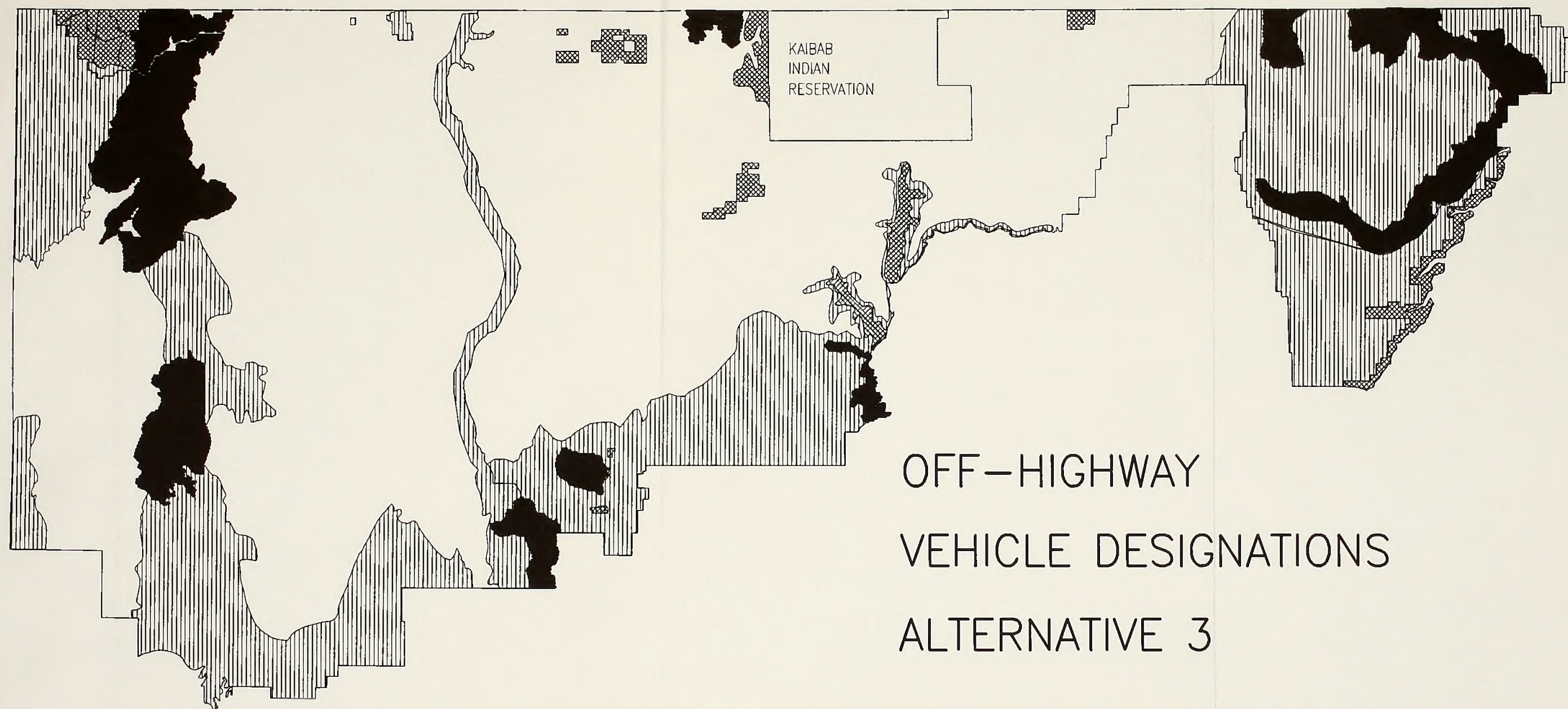


OFF-HIGHWAY VEHICLE DESIGNATIONS ALTERNATIVE 2 (PREFERRED)



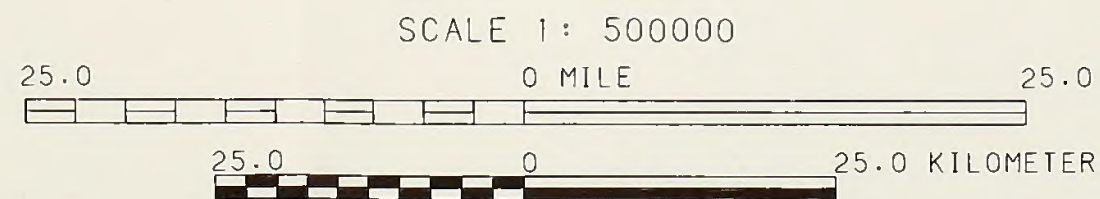
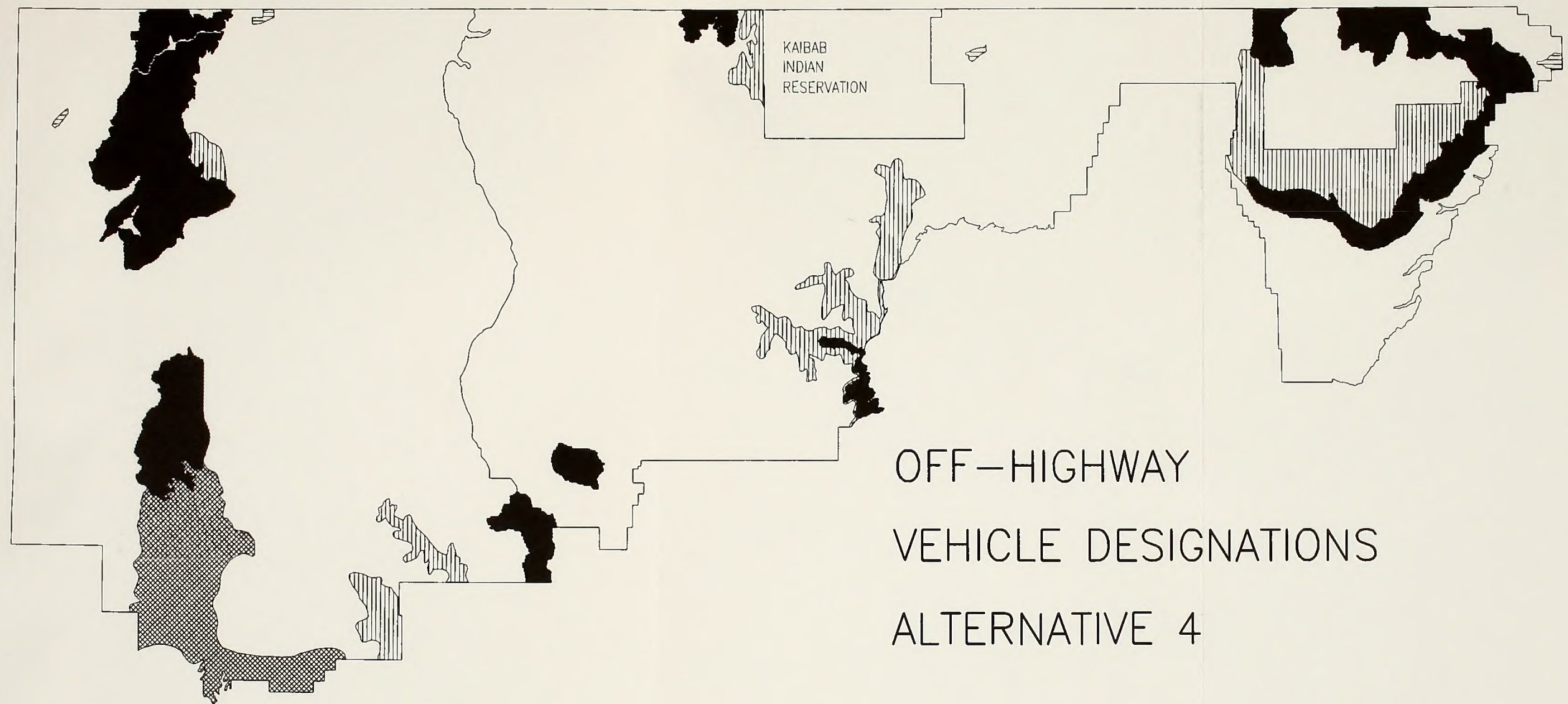
LER&T
EXISTING WILDERNESS (CLOSED)
PROPOSED CLOSED
PROPOSED LDR&T
PROPOSED OPEN



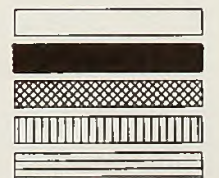


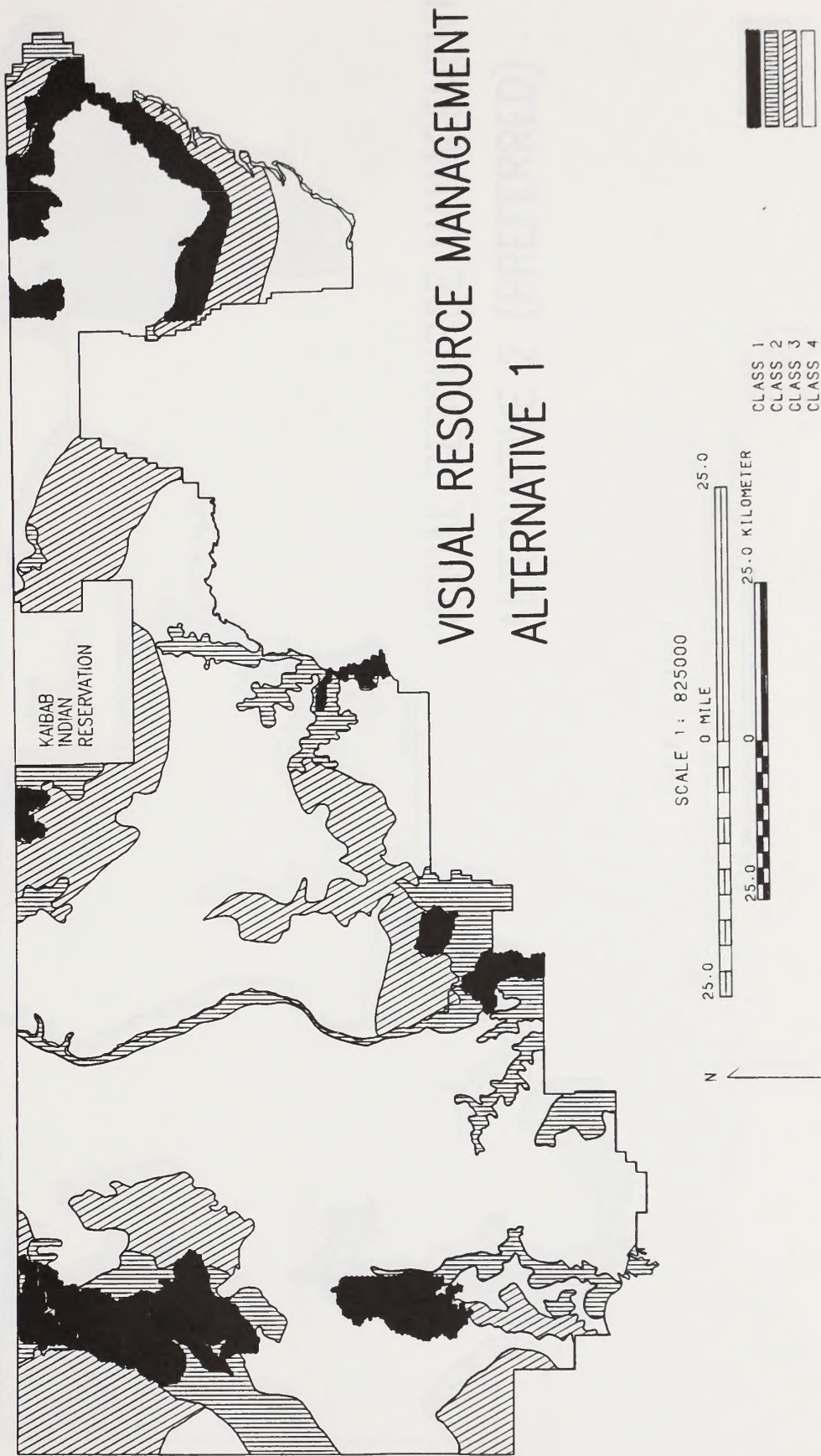
LER&T
EXISTING WILDERNESS (CLOSED)
PROPOSED CLOSED
PROPOSED LDR&T

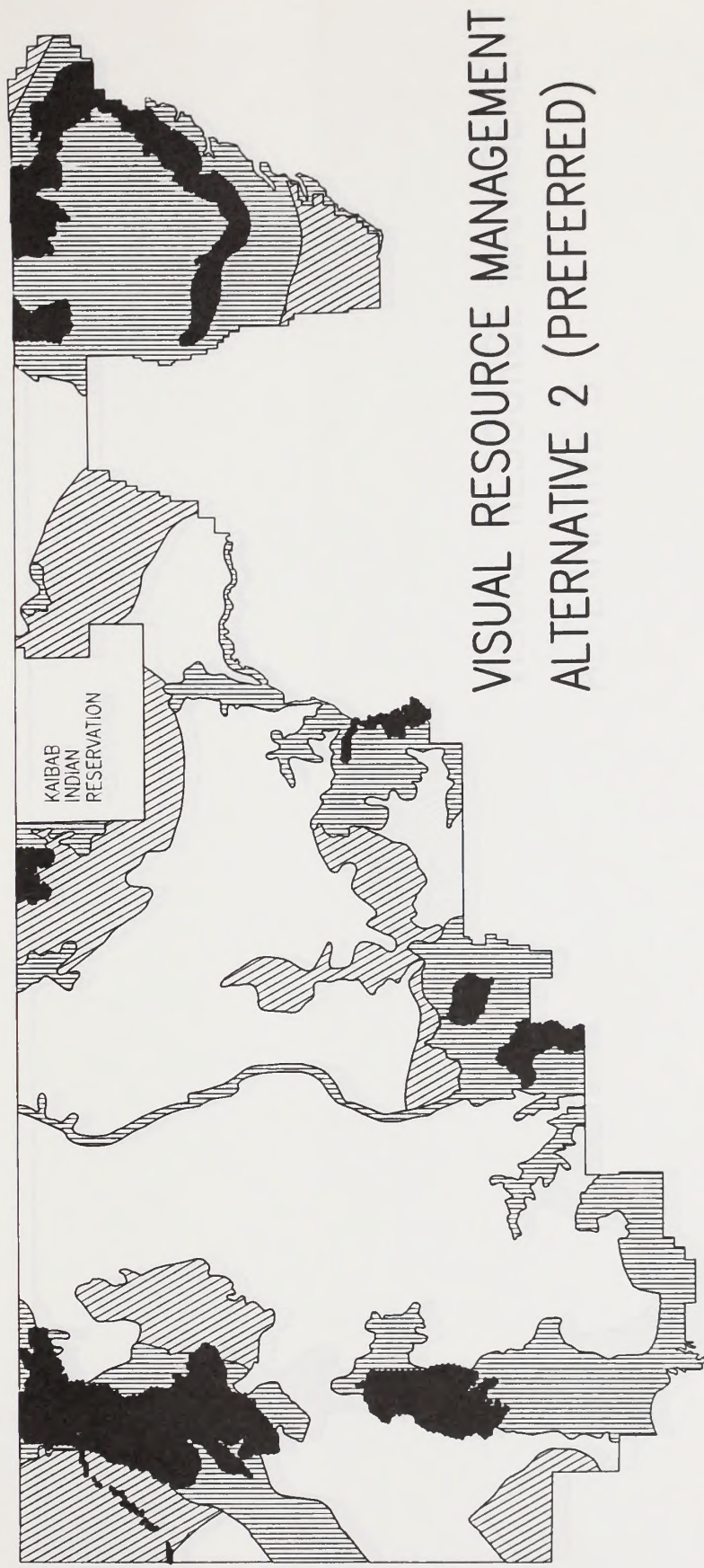




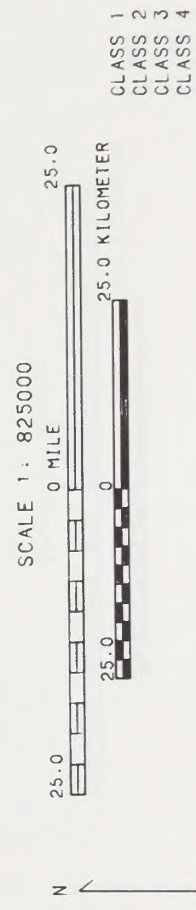
LER&T
EXISTING WILDERNESS (CLOSED)
PROPOSED CLOSED
PROPOSED LDR&T
PROPOSED OPEN

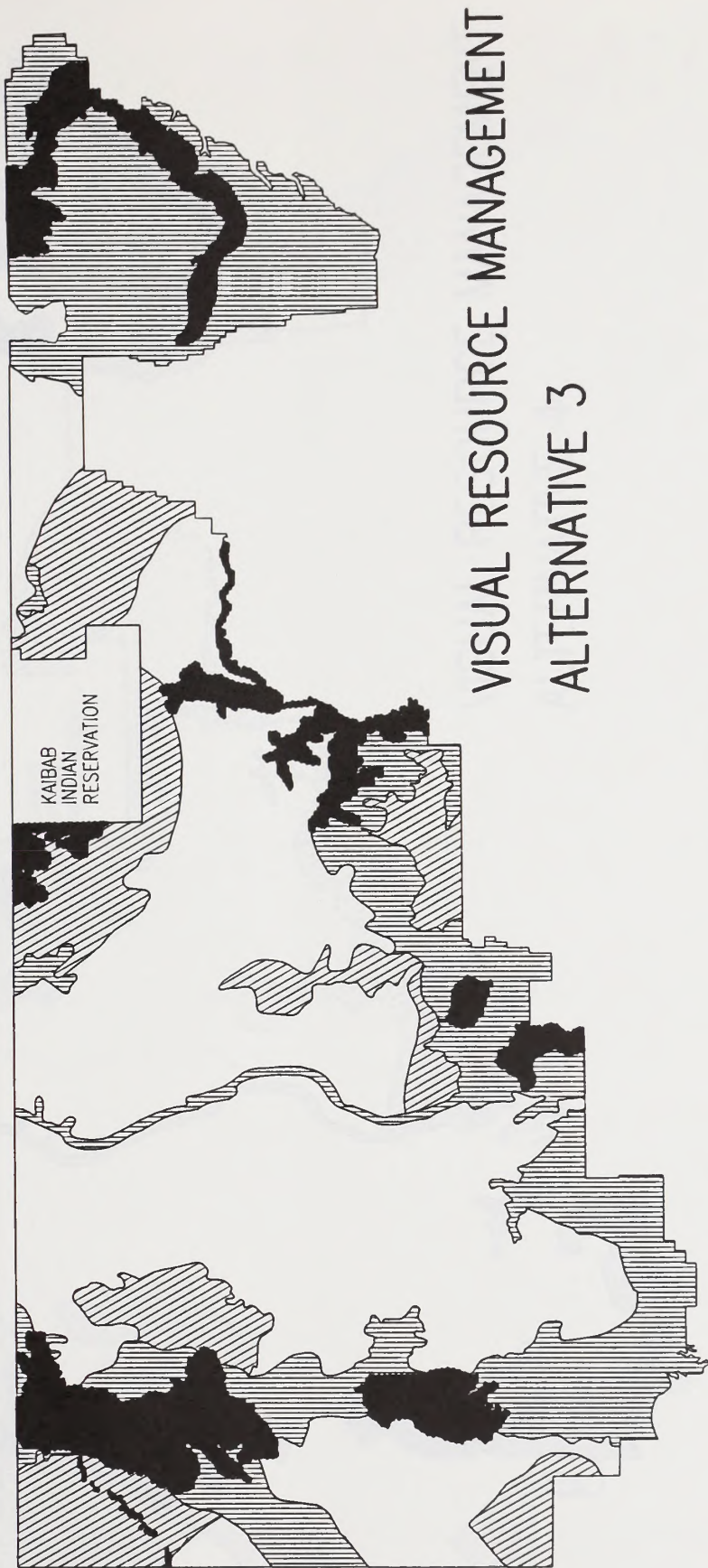




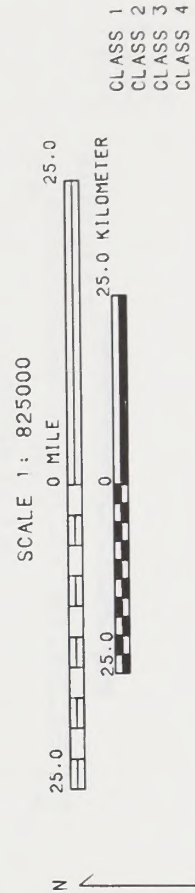


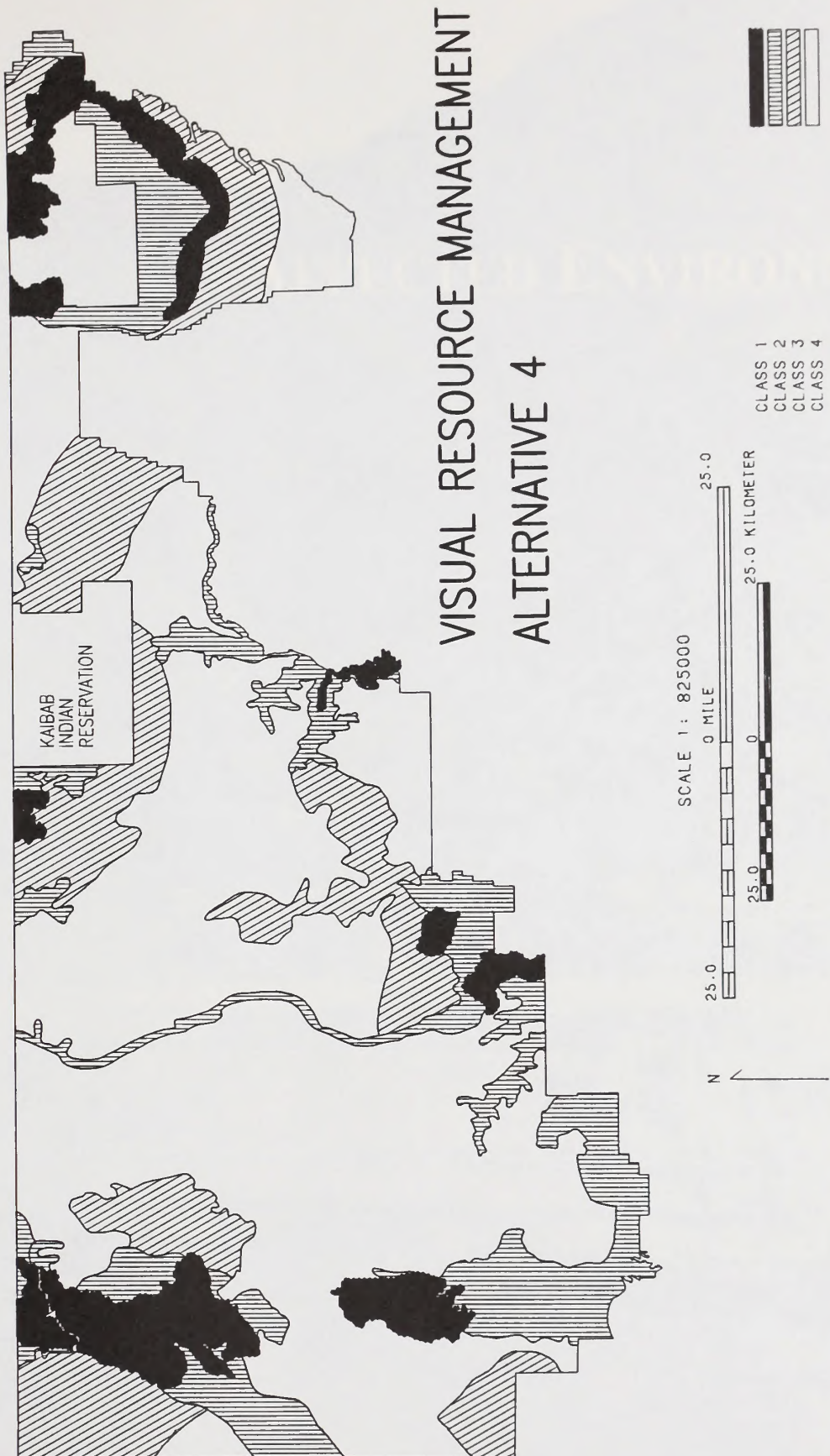
VISUAL RESOURCE MANAGEMENT ALTERNATIVE 2 (PREFERRED)



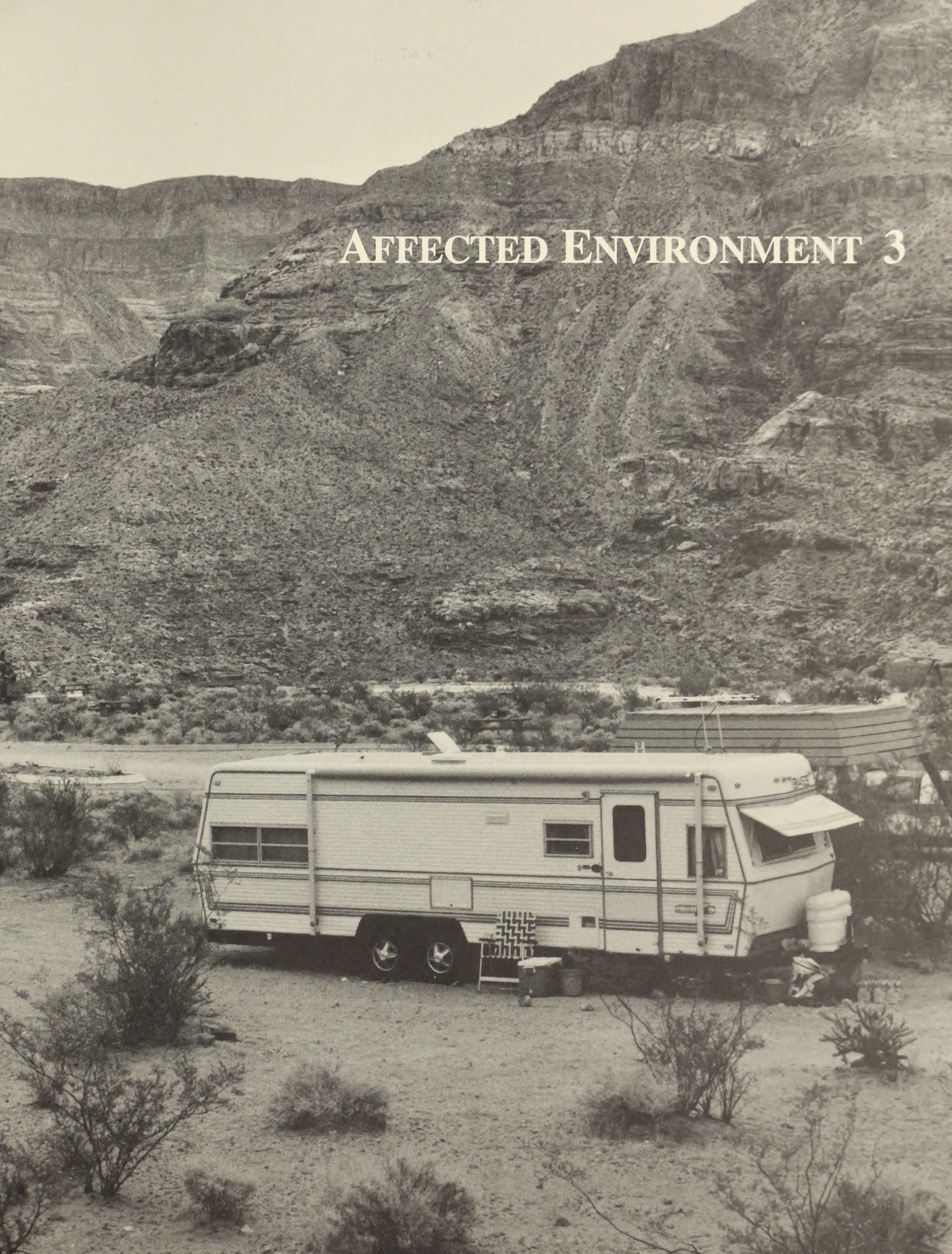


VISUAL RESOURCE MANAGEMENT ALTERNATIVE 3





AFFECTED ENVIRONMENT 3



CHAPTER III

AFFECTED ENVIRONMENT

LAND RESOURCES

The Arizona Strip District is an area separated geographically from access to the south, east and west, by the Colorado River gorge, Grand Canyon and Lake Mead. Fredonia, Colorado City and Littlefield/Beaver Dam are the only towns within the district boundaries. Page, Arizona; Kanab, Hurricane, and St. George, Utah; and Mesquite, Nevada provide most of the goods and services for those working on the district and provide the cultural and economic focus for the district. Residents of the Arizona Strip have closer social and economic ties to Utah and Nevada than to Arizona.

LAND OWNERSHIP

For administrative purposes the district is divided into two resource areas known as the Shivwits and the Vermillion (Map S-1). There are 2,868,000 acres of Bureau of Land Management (BLM) administered land on the Arizona Strip (Map S-2). The district is located in both Coconino and Mohave Counties, Arizona. Table III-1 shows the acres of federal land and minerals administered by BLM. Land status on the Arizona Strip District is approximately 85 percent public land, ten percent state land, and five percent private land.

TABLE III-1
PUBLIC LAND ACRES
(SURFACE AND MINERAL OWNERSHIP)
BLM, ARIZONA STRIP DISTRICT

Ownership	Acres
Federal Surface	
Federal Mineral	2,814,000
State Mineral	30,200
Private Mineral	23,800
State Mineral	
Federal Mineral	15,700
Private Mineral	
Federal Mineral	93,700

Source: Arizona Strip District files

LAND AVAILABLE FOR RECREATION AND OTHER PUBLIC PURPOSES

Over the years local government entities and non-profit organizations have acquired federal land at little cost under the Recreation and Public Purposes (R&PP) Act of 1926. Either by lease or patent (deed) this land has been dedicated to use as landfill sites or other uses which benefit the public at large. Table III-2 provides a breakdown of the number of acres leased or patented under the R&PP and the uses in acres by county.

TABLE III-2
R&PP LEASE AND PATENT ACREAGES
ON THE ARIZONA STRIP DISTRICT
BY COUNTY AND TYPE OF USE

Use	Coconino County	Mohave County
Landfill	180.0 (Lease)	30 (Lease)
Cemetery	60.4 (Patent)	10 (Patent)
TOTALS	240.4 Acres	40 Acres

Source: Arizona Strip District files

LAND EXCHANGES

BLM is in the process of negotiating the acquisition of 129,000 acres of Arizona State land through exchange. As acquired these lands will be managed for multiple-use and incorporated into the management strategies of the surrounding public lands. Originally scheduled for completion by end of FY-88, state exchanges have been placed on hold by the State Attorney General. State selected lands used in the exchanges come from the Phoenix District. Acquisition of 13,000 acres of private land in the Parashant area was accomplished in 1988 through a third-party exchange. There are opportunities to further consolidate public land holdings, acquire valuable resource lands, and meet demands for development potential through land exchanges.

AIRPORTS

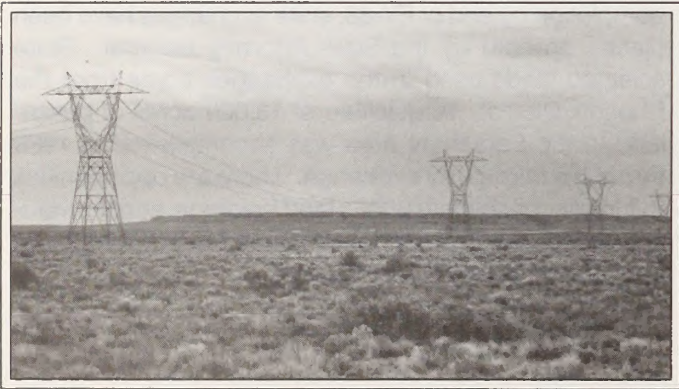
Numerous airstrips or small airport facilities exist within the district. The majority of remote airstrips are no longer functional. However, some of the airstrips that continue to receive use are Marble Canyon, Cliff Dwellers, Toroweap, Whitmore, Colorado City, and Pakoon. These airstrips generally have very little facility development and are typically maintained by the predominant users.

The town of Colorado City is currently proposing expansion of their facilities to accommodate larger aircraft as well as a larger air traffic volume. They are planning to apply for an airport land grant.

Preliminary discussions with the City of Page, Arizona have indicated a future need for expanded airport facilities. BLM lands in Ferry Swale, northwest of Page, have been identified by the city as a tentative location for a new, enlarged facility. This site and others are currently under study by the Federal Aviation Administration to determine their suitability for such use from an air safety standpoint.

RIGHT-OF-WAY DEVELOPMENT

BLM is responsible for authorizing rights-of-ways on public land. Use authorizations are made by several methods such as rights-of-way (R/W), use permits, and leases. Land uses on public land include roads, electrical transmission lines, telephone lines, pipelines, communication sites, electric power substations, and power distribution lines. Much of the demand for land use authorizations are related to residential and industrial development. Land use authorizations are currently processed by the BLM on a case-by-case basis as proposals for use are received. The authorization process involves writing an environmental assessment or EIS if appropriate and developing resource protection stipulations prior to approval of such use. Table III-3 shows authorized uses by resource area.



The Navajo - McCullough powerline.

TABLE III-3
LAND USE AUTHORIZATIONS
ON THE ARIZONA STRIP DISTRICT
BY RESOURCE AREA AND TYPE OF USE

Authorized Use	Shivwits RA	Vermillion RA
Roads	6	16
Utilities R/W	5	20
Communication Sites	3	1
R&PP	2	2
Airports	1	1
Small Tract Lease	1	0
Other R/W	0	14
R/W Corridors	1	1

Source: Arizona Strip District files

RIGHT-OF-WAY CORRIDORS

Existing Management Framework Plans (MFP) designated one right-of-way corridor traversing the district east to west along the present route of the Navajo-McCullough 500 KV powerline. The corridor is two miles wide on the Shivwits Resource Area and 2,000 feet wide on the Vermillion Resource Area.

The corridor provides a single route capable of accommodating multiple transmission facilities. This minimizes adverse environmental impacts and reduces the proliferation of separate rights-of-way. It also provides parameters and a planning basis for companies considering right-of-way projects. Major transmission facility proponents are directed to this corridor as the BLM-preferred route. Full use of this corridor may be limited in capacity by the terrain and rocky conditions in the nearby Beaver Dam Mountains of Utah.

PAYMENTS IN LIEU OF TAXES (PILT)

The Payments in Lieu of Taxes Act (PILT) provides money to county governments to compensate for the loss of property tax revenue on tax-exempt federal land. Through the Secretary of the Interior, BLM has been delegated the responsibility of administering the act, also known as Public Law 94-565. The payments are designed to supplement other federal receipt sharing funds that local governments may be receiving. Payments received under the act may be used by the recipients for any governmental purpose and are based on the number of acres of "entitlement land" within the county. Entitlement land consists of land administered by the National Forest System, National Park System, Bureau of Land

Management, and land dedicated to the use of federal water resource development projects. Table III-4 shows "In Lieu" payments over the past three years to each county on the district.

The act specifically prohibits payments for tax exempt land acquired from state or local governments, but does authorize payments for any land which was acquired after December 31, 1970 as additions to the National Park System or National Forest Wilderness Areas.

TABLE III-4
PAYMENTS IN LIEU OF TAXES

\$ County	Payments		
	1985	1986	1987
Coconino	453,512	448,880	463,704
Mohave	971,656	960,947	988,369
TOTALS	1,425,168	1,409,827	1,452,073

Source: Arizona Strip District files

Note: These dollar figures are for all public lands in the subject counties, not just that affected by the Arizona Strip.

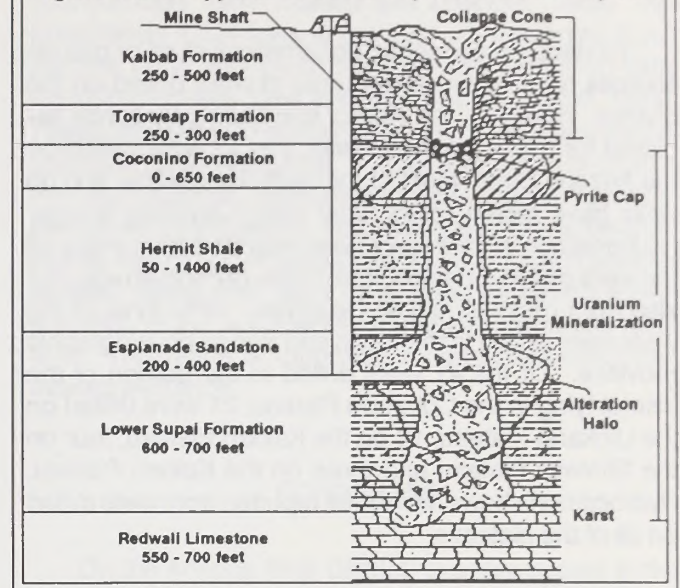
MINERAL RESOURCES

PHYSIOGRAPHY

The Arizona Strip District lies within two distinct physiographic provinces. The western third of the district, from the Grand Wash Cliffs to the Nevada border, lies in the Basin and Range province. This area is characterized by an irregular surface, northerly trending mountain ranges, sediment filled basins, abundant igneous and metamorphic rock exposures, extensive faulting and folding, and large exposures of Precambrian rock.

The eastern two-thirds of the district lies within the Colorado Plateau province. This area, from the Grand Wash Cliffs east to Marble Canyon, exhibits primarily sedimentary rock exposures, a regular, gently dipping surface, and elevations exceeding one mile with subordinate plateaus exceeding 9,000 feet. Breccia pipes, unique geologic features in this portion of the Colorado Plateau, are important to mineral development due to their potential for high grade uranium deposits (Figure III-1). Most of the significant locatable mineral production on the district is from these features.

Figure III-1. Typical Breccia Pipe Uranium Deposit



MINERALS AND MINERAL POTENTIAL

The Arizona Strip District has been rated for its mineral potential (BLM, 1988) using the guidance contained in the Bureau of Land Management 3031 Manual. A summary of the rating for all mineral resources is presented in Table III-5. A description of the potential and certainty levels are given in Appendix 25. The rating given in the table indicates the highest rating for that resource within the district and does not imply that the resource has the potential for uniform occurrence throughout the district.

TABLE III-5
MINERAL RESOURCE POTENTIAL RATINGS

Mineral Resource	Level of Potential	Level of Certainty (1)
Coal	O-No Potential	D
Oil and Gas	M-Moderate	C
Geothermal	M-Moderate	B
Sodium	M-Moderate	C
Potassium	O-No Potential	C
Metallic Minerals	H-High	D
Uranium	H-High	D
Non-Metallic	H-High	D
Common Varieties	H-High	D

Source: Arizona Strip District files
(1) See Appendix 25 for a description of certainty levels.

OIL AND GAS

To date, no economic occurrences of oil or gas resources have been encountered in wells drilled on the district. However, the district has been only lightly explored for these resources with only 43 wells drilled on the Arizona Strip. Most of the wells are shallow and no wells have tested rocks older than Cambrian in age. Hydrocarbon shows have been reported from many of the wells drilled, primarily from rocks of Permian age, but also from rocks as old as Devonian. Only three of the wells were drilled in the Basin and Range physiographic province. Of the 41 wells drilled in the portion of the district lying in the Colorado Plateau, 21 were drilled on the Uinkaret Plateau, 12 on the Kaibab Plateau, four on the Shivwits Plateau and three on the Kaibab Plateau. Hydrocarbon shows have been reported from wells drilled on all of the plateaus.

Ryder (1983) rated the oil and gas potential of the Arizona Strip District as moderate in the north central and extreme western portions of the district. This rating was based on several oil shows reported from wells drilled in the area and the location of the tracts in relation to the Paleozoic hingeline. In the case of the moderate potential in the north central portion of the district, consideration was also given to that area's location in relation to the Virgin oil field in southwest Utah. In both areas, Ryder speculated that any hydrocarbons present would have migrated into the area from the Rocky Mountain Geosyncline lying to the west. Heylmun (1987) rated the Arizona Strip as having a good potential for oil accumulations in northwest striking anticlinal folds and other structural traps located away from major fault zones. Good potential was also assigned to the Shnabkaib member of the Moenkopi Formation and the Toroweap Formation where stratigraphic traps may exist. Reynolds and others (1988) have recently recognized the Proterozoic Chuar group as a potential source rock for hydrocarbons in northern Arizona. Thus, it would appear that the many thousands of feet of marine sediment that lie in and immediately adjacent to the Arizona Strip District to the west would provide at least a moderate potential for the origination and possible migration of hydrocarbons into the area.

Based on the above information, the district has been rated as to its oil and gas potential (Map III-1). Oil and gas accumulations which may underlie the district would probably occur in structural or stratigraphic traps within rocks of upper Proterozoic through upper Paleozoic age. The certainty that oil and gas exists in this area is supported by direct evidence in the form of oil and gas shows in wells. However, the evidence is too small to support or refute the existence of a valuable resource. Tertiary and Holocene erosion along the major drainages

crossing the district would tend to lower the potential for the preservation of hydrocarbon accumulations due to probable ground water flushing. Thus, most of the southern and eastern portion of the district is rated as having a low potential. The certainty that oil and gas resources do not exist in this area is supported only by indirect evidence.

GEOTHERMAL

Extensive exploration for geothermal resources in the district has not occurred, though warm springs and wells are known to occur in the area. Geothermal resources exposed in the area are of very low temperature and is not presently usable for any purpose other than space heating. The potential for the use of the geothermal resource is low given the sparsely populated nature of the Arizona Strip.

SODIUM

Sodium deposits have been reported from the Muddy Creek Formation near Mesquite, Nevada. The occurrence is reportedly contained within small isolated playa deposits. Though information of a quantitative nature is lacking, this area has been classified as prospectively valuable for sodium (Map III-2). Other than reconnaissance work, no activity is known to have occurred for the exploration or development of the sodium resource.

METALLIC MINERALS

Potentially favorable environments for the occurrence of metallic minerals in the Arizona Strip include the following; carbonate hosted gold, placer gold, and breccia pipe related precious and base metal deposits, possibly containing rare earth elements.

Carbonate hosted gold has a moderate potential for occurrence in the Virgin Mountains. Any gold mineralization present would be of the bulk-tonnage, low-grade type as described by Berger (1986) and Fisher and Juilland (1986). Mineralization would be associated with normal, thrust and possibly detachment faults in the area. Small deposits and anomalies of tungsten, copper, silver, arsenic, molybdenum, lead and zinc have been identified in the area (Villalobos and Ham, 1981). These elements were identified by Berger (1986) as being either pathfinder elements or elements occurring in small deposits in the vicinity of gold mineralization.

Placer gold deposits reportedly occur along the lower western slope of the Beaver Dam and Virgin Mountains. Mineralization reportedly ranges from .05 to .07

grams per tonne and occurs in the alluvial gravels along the Beaver Dam Wash. Exploration for these gold deposits is taking place immediately north of the Arizona Strip District in Utah (Spooner, 1988). Based on the geologic environment, the inferred geologic processes, and reported occurrence of gold in this area, the alluvial material along Beaver Dam Wash has a moderate potential for the occurrence of gold. Gold exploration is occurring although development potential is speculative at the present time.

Breccia pipe related precious and base metal deposits are known to occur along the lower Grand Wash Cliffs and Virgin Mountains. These deposits reportedly contain copper (up to 23 percent), silver (up to 10 ounces/ton), and relatively minor amounts of lead, zinc, uranium, and gold (Keith and others, 1983). Germanium and Gallium are also known to occur in the Apex deposit in Utah (Bernstein, 1986). It is possible that these elements could occur in breccia pipes located along the lower Grand Wash Cliffs and Virgin Mountains. Based upon the geologic environment, inferred geologic processes and mines in these areas, they have been rated as having a high potential for the occurrence of metallic mineral resources (Map III-3). The available data provide abundant direct and indirect evidence to support the existence of the resource.

URANIUM

Exploration for and development of uranium resources are currently the most active mineral related operations on the district. There are two mines in operation, three in various stages of development, and three that have been closed and reclaimed. These mines lie to the north and west of the Kanab Creek drainage. The uranium occurs in collapse features known as breccia pipes (Figure III-1).

Breccia pipes in the Arizona Strip originate in Red-wall Limestone and form collapse features in overlying rocks as young as the Chinle Formation. Uranium mineralization occurs in the Supai through Toroweap Formations (Krewedl and Carisey, 1986). Eight deposits of uranium, presently economical to develop, have been identified by Energy Fuels Nuclear in the Kanab Creek area. These deposits are almost exclusively uranium bearing, though other metals are known to exist. Active exploration programs have been undertaken by several companies in search of additional deposits on the Arizona Strip.

Sandstone type uranium deposits are known to occur in the Petrified Forest and Shinarump members of the Chinle Formation. Uranium was produced from deposits

in these members in the 1950s (Keith and others, 1983; Scarborough, 1981; Baillieu and Zollinger, 1980). Approximately 1,524 tons of uranium ore averaging 0.201 percent U308 was produced from the Vermillion Cliffs deposits between 1954 and 1957 (Scarborough, 1981). These deposits are located within the present day Vermillion Cliffs Wilderness Area. Uranium was also produced from the Rainbow Hills mining district though no production figures are available. Based on the geologic environments, inferred geologic processes and numerous mines in these areas; they have been rated as having a high potential for the occurrence of uranium resources (Map III-4). This rating is supported by abundant direct and indirect evidence.

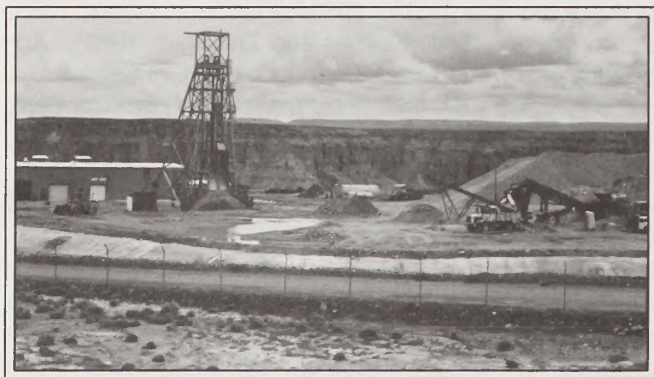
GYPSUM

On the Arizona Strip District, gypsum occurs in the Pakoon Dolomite, the Seligman and Woods Ranch members of the Toroweap Formation (Nielson, 1986; Hintze, 1986; Moore, 1972), the Harrisburg Member of the Kaibab Formation (Nielson, 1986; Cheevers and Rawson, 1979); and the Lower Red Member of the Moenkopi Formation (Stewart et al, 1972; Wilson, 1962). Gypsum in the Kaibab and Moenkopi formations appears to be of good quality. Based on the known occurrence of gypsum in these formations, areas overlain by the Toroweap, Kaibab, and Moenkopi Formations have a high favorability for containing gypsum. The thick gypsum deposit in the Pakoon Dolomite appears to be an isolated occurrence in the Cedar Pockets area and, as such, the Pakoon Dolomite has been rated highly favorable in that area (Map III-2). The certainty that gypsum occurs in these areas is also high, supported by abundant direct and indirect evidence.

Large gypsum deposits are found in the northwestern portion of the district around Black Rock Gulch, the north end of the Sunshine Trail and in Cedar Pockets. Operators are actively mining in two locations and another mine is currently inactive. Assays show the Cedar Pockets and Black Rock Gulch deposits to be of high quality and good potential exists for gypsum mining from these areas.

SAND AND GRAVEL

In the western portion of the district, gravel is abundant along the lower slopes of the Virgin and Beaver Dam Mountains. Here alluvial fans have formed and the gravel is expected to be unsorted but of good quality. Well sorted, good quality gravel is also expected to occur in



Kanab North uranium mine.

stream terraces which have formed along both the Beaver Dam Wash and the Virgin River. Based on the surface exposures found here, these areas have been assigned a high favorability for the occurrence of good quality gravel (Map III-5).

Sand and gravel resources are relatively scarce in the central portion of the Arizona Strip District. Large deposits are confined to isolated exposures of gravel in the lower portions of the Moenkopi Formation. Both Cedar Knoll and Little Cedar Knoll are examples of this type of deposit. These deposits, though few in number, contain significant quantities of good quality gravel. The remainder of the central portion of the district is relatively gravel poor. Small deposits of good quality gravel occur in exposures of the Shinarump Member of the Chinle Formation, deposits formed along the western flank of the Hurricane fault zone and Quarternary aged ephemeral stream channels cut into the Kaibab Formation. Gravel deposits within the Shinarump Member may be cemented and drilling and blasting or ripping may be required to develop the gravel resources in some areas. Gravel along the Hurricane fault zone is composed primarily of limestone and may be found virtually anywhere along the western escarpment of the fault zone. Gravel which occurs in Quaternary stream channel deposits would probably be confined to relatively narrow zones, averaging approximately 75 feet in width. Based on the known occurrence of gravel in these environments, these areas have been assigned a high favorability for the occurrence of this resource (Map III-5).

In the extreme eastern portion of the district, gravel is also relatively scarce. Exposures of good quality gravel do, however, exist along the eastern flank of the Kaibab monocline. Here gravel occurs in alluvial fans and ephemeral stream channels formed at the mouths of canyons emanating from the Kaibab Plateau. The gravel resource is relatively unsorted with sizes ranging from boulders to sand. In addition to these resources, the potential exists for the occurrence of gravel resources in the Chinle Formation (Map III-5).

SUMMARY OF PAST ACTIVITY

LEASABLE MINERAL RESOURCES

The only leasable mineral resources which have been explored for in the district in the past include oil and gas. This is the only leasable mineral resource likely to be explored for or developed over the life of the plan and is, therefore, the only mineral resource discussed in this document.

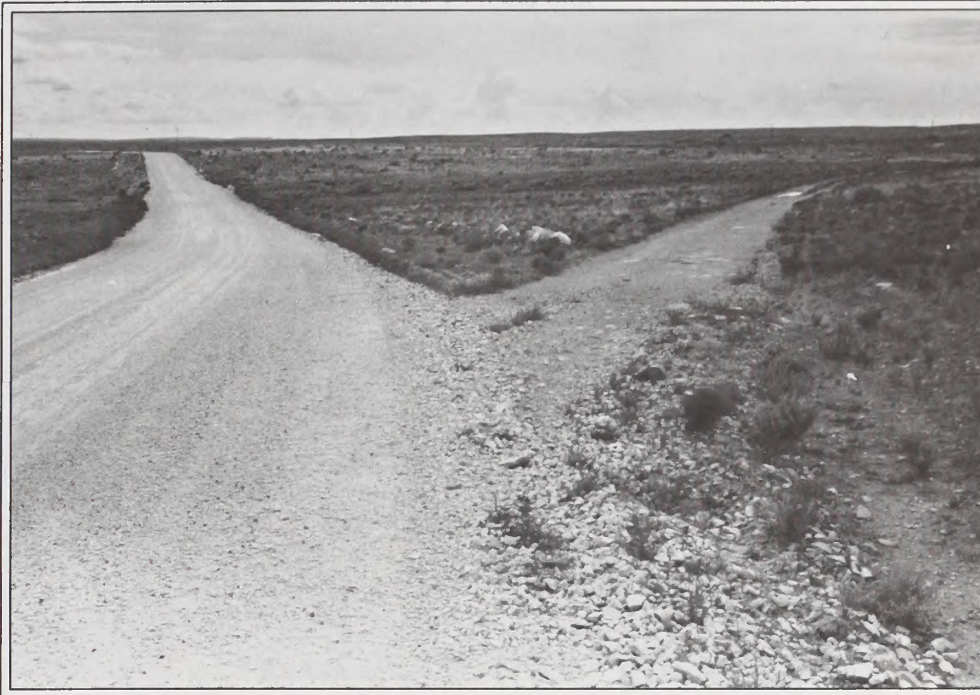
There have been some 43 oil and gas exploration wells drilled in the Arizona Strip since the first well was drilled in 1909. None of these wells have encountered oil or gas in paying quantities, though oil and gas shows have been reported from a majority of the wells. Disturbance associated with each well, including access, typically totals between five and ten acres. Assuming an average of eight acres disturbed per well, approximately 345 acres have been disturbed in conjunction with oil and gas exploration.

Typical well drilling operations may last as long as four months, though deep wells may take longer to drill. As no oil or gas lease has been produced from this area, reclamation of all disturbance associated with exploration has been performed immediately following exploration operations. Complete reclamation of this disturbance takes from five to ten years.

LOCATABLE MINERALS

Within the district, locatable minerals being explored for and developed include those contained in breccia pipes (primarily uranium). Exploration and production of other minerals such as gold and uncommon varieties of stone are occurring and this activity is expected to continue through the planning horizon. Map III-6 shows areas within the district where large claim blocks have been located and active mines presently exist. The size, configuration, and location of these claimed areas is constantly changing due to mining claim abandonment and new claim location. Map III-7 shows the location of mines and exploration sites submitted under 43 CFR 3809 regulations since 1980.

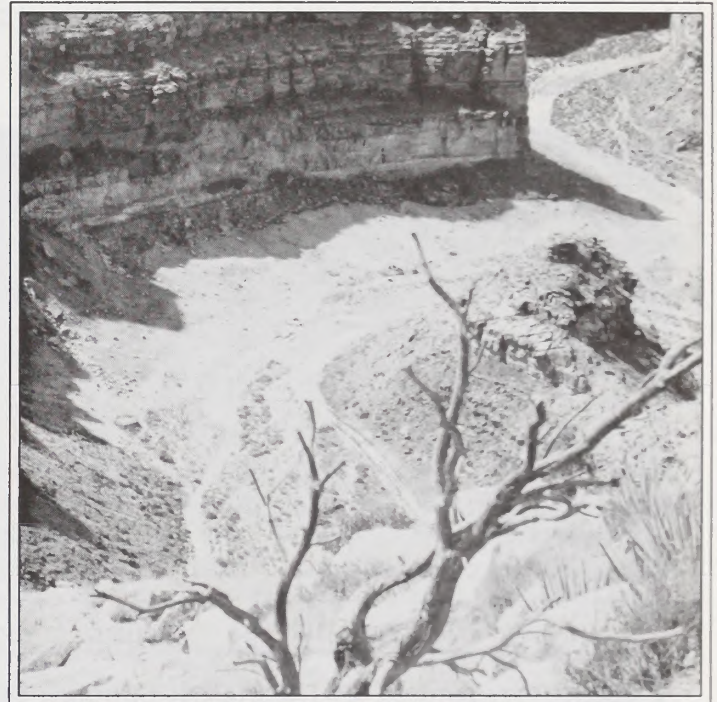
On the Arizona Strip, complete rehabilitation of a disturbance takes from five to ten years. After a BLM site inspection determines a site to be completely rehabilitated, the operator and claimant are released from further obligation for reclamation of that site. A site is determined by the BLM to be completely rehabilitated when vegetation on the disturbed site is equal in density and variety to vegetation in the surrounding undisturbed area. In addition, the site must be adequately contoured and all foreign debris removed. New roads constructed



*Upgraded mining road on left.
Previous road condition on right.*



Roads in Hack's Canyon during mining operations, 1980 - 1987.



Roads reclaimed in Hack's Canyon, 1989.

CHAPTER III - AFFECTED ENVIRONMENT

for exploration and mining purposes are shown on Map III-8. When these roads are no longer needed, they are reclaimed.

The following is a summary of past locatable mineral exploration and development activity by commodity:

URANIUM:

From January 1980 through September 1988, 528 notices or plans have been submitted for uranium exploration or development activities in the district. Table III-6 summarizes these activities by fiscal year (October 1 through September 30).

TABLE III-6
URANIUM EXPLORATION / DEVELOPMENT ACTIVITIES ON THE ARIZONA STRIP DISTRICT

Activity	Fiscal Year									Total
	1980	1981	1982	1983	1984	1985	1986	1987	1988	
<u>Exploration</u>										
# of cases submitted	5	57	86	47	82	26	68	87	70	528
# of cases w/activity	5	47	58	34	51	22	52	62	53	384
% cases w/activity	100	82	67	72	62	85	76	71	76	73
# of known drill holes	48	149	269	121	272	35	170	107	40	1,211
# of cases w/drill holes	5	43	49	23	40	11	29	26	11	237
# of holes/case	9.6	3.5	5.5	5.3	6.8	3.2	5.9	4.1	3.6	5.1
# acres disturbed	6.5	33.9	57.2	39.4	62.8	24.8	60.5	72.4	57.6	415.1
# acres reclaimed	6.5	29.7	44.1	38.5	54.0	18.9	50.5	44.6	44.2	331
% acres reclaimed	100	88	77	98	86	76	83	62	77	80
Ave. acres disturbed/case	1.3	.72	.99	1.2	1.2	1.2	1.2	1.4	1.1	1.1
<u>Development</u>										
Mine name		Hack	Pige		K.N.		Pine	Herm	AZ 1	
Mine yard acres		21.7	40.0		3.7		20.8	23.6	19.4	139.2
Upgraded access acres (from 10' to 25' W)		16.1	30.3		0		51.5	0	0	97.9
New access acres (35' W)		0	0		8.5		2.1	5.1	0.1	15.8
Total access acres		16.1	30.3		8.5		53.6	5.1	0.1	113.7
Powerline		17.6	17.0		9.7		10.1	0	0	54.4
Total # acres disturbed		55.4	87.3		31.9		84.5	28.7	19.5	307.3
Total # acres reclaimed		37.8	0		0		0	0	0	37.8
<u>Total</u>										
Acres disturbed	6.5	89.3	144.5	39.4	94.7	24.8	145	101.1	77.1	722.4
Acres reclaimed	6.5	67.5	44.1	38.5	54	18.9	50.5	44.6	44.2	368.8
% acres reclaimed	100	80	31	98	57	76	35	44	57	51
Ave. acres disturbed/case	1.3	1.9	2.5	1.2	1.7	1.2	2.8	1.6	1.5	1.9

Source: Arizona Strip District files

Of 528 cases submitted, 384 (73%) resulted in actual surface disturbance. Exploration activities consist of drilling, trenching, and temporary access. Those sites not yet reclaimed include ongoing exploration and sites where future re-entry is planned. Currently there are five mines in various phases of development, all within the Vermillion Resource Area. These mines have resulted in disturbance totaling 139 acres. The three Hack Canyon

mines, developed from two surface facilities and 5.6 miles of upgraded access (37.8 acres disturbed), were closed and fully reclaimed in 1988. The remaining mine sites will be reclaimed immediately following depletion of the ore body. On the average, 17 acres are disturbed per mine site. Reclamation generally begins immediately or soon after the operator determines that no further exploration is warranted or production has been completed.



*Hacks Canyon Mine under development
from 1980 to 1987.*



Hacks Canyon Mine reclaimed, 1989.

GYPSUM

Since the surface management regulations became effective, a total of 20 cases have been submitted for gypsum exploration and development. These cases include both notices and plans. Table III-7 summarizes these activities by fiscal year.

Only 45 percent of the submitted cases resulted in actual surface disturbance. Of the nine sites disturbed,

none have completed reclamation. Seven of the sites have ongoing exploration or development. On the remaining two, steps are being taken to assure reclamation.

At the present time, there are three gypsum mines in various stages of development on the district. Production from these mines has been sporadic.

TABLE III-7
GYPSUM EXPLORATION / DEVELOPMENT ACTIVITIES ON THE ARIZONA STRIP DISTRICT

Activity	Fiscal Year								TOTAL
	1981	1982	1983	1984	1985	1986	1987	1988	
# Cases Submitted	2	0	1	3	3	7	3	1	20
# Cases with Activity	2	-	0	2	1	3	0	1	9
% Cases with Activity	100	-	0	67	33	43	0	100	45
Acres Disturbed	7	-	0	8	1	11	0	1	28
Acres Reclaimed	0	-	-	0	0	0	-	0	0
% Acres Reclaimed	0	-	-	0	0	0	-	0	0
Ave Acres Disturbed/Case	3.5	-	-	4.0	1.0	3.7	-	0.5	3.1

Source: Arizona Strip District files

Other Minerals

Since the surface management regulations became effective, nine cases have been submitted for the exploration and development of other locatable minerals on the district. These cases include both notices and plans. Table III-8 summarizes these activities by fiscal year.

Of the eight cases with surface disturbance, two were for uncommon varieties of stone, five were for other minerals including gold, and one was for a water tank associated with uranium exploration. The half-acre unreclaimed has exploration activities still being conducted on it.

TABLE III-8
OTHER MINERALS EXPLORATION / DEVELOPMENT ACTIVITIES ON THE ARIZONA STRIP DISTRICT

Activity	Fiscal Year								TOTAL
	1981	1982	1983	1984	1985	1986	1987	1988	
# Cases Submitted	1	2	0	1	1	0	0	4	9
# Cases with Activity	1	2	-	1	1	-	-	3	8
% Cases with Activity	100	100	-	100	100	-	-	75	89
Acres Disturbed	.1	.5	-	.1	.1	-	-	.4	1.2
Acres Reclaimed	0	.5	-	.1	.1	-	-	0	.7
% Acres Reclaimed	0	100	-	100	100	-	-	0	58
Ave Acres Disturbed/Case	.1	.3	-	.1	.1	-	-	.1	.2

Source: Arizona Strip District files

CULTURAL RESOURCES

Cultural resources on the Arizona Strip District developed from centuries of human occupation which has been divided into five time periods: Paleoindian (9500-7000 BC), Archaic (7000-300 BC), Formative (300 BC-AD 1200), Neo-Archaic (1200-1540 AD), and Historic (1540-Present).

Due to the widespread area on the Arizona Strip this discussion will concentrate on significant sites. However, sites occur over the Arizona Strip in patterns of densely occupied areas and widely scattered sites. Table III-9 summarizes what has been evaluated to 1987.

TABLE III-9
CULTURAL SITES DISCOVERED
ON THE ARIZONA STRIP AS OF 1986*

Site Type	Paleo-Indian	Formative	Neo-Archaic	Unknown	Total/%
Habitation	0	853	4	22	879/51
Base Camp	4	107	5	45	161/9
Limited Activity	27	239	13	396	675/39
Unknown	0	4	3	4	11/1
TOTAL	31	1,203	25	467	1,726/100
PERCENT	2	70	1	27	

Source: Arizona Strip District files

*2,000 + sites have been recorded as of 1989.

The Formative is by far the best represented time period on the district. Recorded sites from the Archaic and Neo-Archaic periods are poorly represented, often a result of their subtle appearance or lack of diagnostic artifacts. Formative period sites are found districtwide, while Neo-Archaic sites are more prevalent in the western portion. Sites classified as base and temporary camps have no structural remains but contain artifacts and features indicating short-term occupation. Limited activity sites include artifact scatters (lithic scatter, sherd scatter, groundstone scatters or a combination of these), isolated features (e.g. roasting pit, hearth, rock art, granary/cist, trail, burial), and specialized activity sites (e.g. quarries, agricultural features, shrines). Sites classified as "unknown" are those for which not enough information was known to assign them to a particular type. This data is from class III inventories completed on approximately two percent of the Arizona Strip District's acreage.

IMPORTANT PREHISTORIC CULTURAL RESOURCE AREAS

While many cultural resources are known to exist on the Arizona Strip, several areas are known to contain particularly high concentrations of cultural properties. The areas described below are recognized as priority areas but it is recognized that other areas of cultural significance exist within the district.

The Paria Canyon and Plateau contain virtually the entire spectrum of site types and features known to occur in the northern southwest, including pithouses, surface masonry features, habitation structures, granaries, storage cists, hearths, lithic scatters, open campsites, rock art, rock shelters, and trails. Over 500 sites have been recorded in this area to date, and many of the sites are large and impressive. The area holds great potential for answering important research questions.

Moonshine Ridge is an area which offers an abundant source of sites representing varying ages of past human occupancy. The area has a pinyon-juniper woodland cover varying from scattered to closed canopy. The footslopes of the mesa are one of the potential sources of water. The pinyon-juniper covered ridges surround broad valleys of potential horticultural land. The area has had random sampling surveys as well as approximately 400 acres of class III survey conducted by members of Brigham Young University (BYU) in the summer of 1987. This area has a potential for answering important research questions. Observation has established the Johnson Spring and Lost Spring Mountain areas have rich cultural resources, much like Moonshine Ridge. In addition, Lost Spring Mountain has a high frequency of rock shelter and surface masonry features and rock art.

Mount Trumbull and the Uinkaret Plateau have witnessed thousands of years of human activity due to the abundance of game animals, wild plant food, water, fertile soils and timber. Humans had occupied the area by 2600 BC as evidenced by the split twig figurines found in nearby canyon rockshelters. By about AD 1 evidence of horticulture appears as Anasazi occupation of the Uinkaret Mountains appears in the form of both small and large habitation sites and rock art. The Uinkaret Mountains also offer signs of Paiute occupation through ceramics found in association with several Anasazi pueblo sites. Much is still to be learned about the human occupancy of the Uinkaret Mountains. Only a few thousand acres are currently inventoried. This area has potential for answering many important research questions for both the public lands and those that are administered by the Grand Canyon National Park. This area has

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two significant rock art sites, Witch Pool and Nampaweap. Nampaweap is an extensive petroglyph site and Witch Pool has petroglyphs and some pictographs possibly dating from the era of the John Wesley Powell Expedition.

The Virgin River Corridor has a high density of various prehistoric sites. Many have been vandalized, however, they still contain scientific information. Little Black Mountain is a petroglyph site found south of St. George, Utah on the state line, short distance from the Virgin River. The Virgin and Beaver Dam Mountains are predicted to have medium site density, mainly seasonal camp sites of all cultures. The Wolf Hole, Black Rock and Poverty Mountains are predicted to have both small habitation and camp sites. Exploitive (hunting, gathering) sites in medium densities should be found on the benches of the Shivwits and Sanup Plateaus. Seasonal hunting and gathering sites in low densities are predicted in the Grand Wash areas. The heads of all the canyons leading to the Grand Canyon, and where canyon floors are influenced by flood (agriculture) zones, are all predicted to have high densities of prehistoric cultural sites. Varying levels of inventory are beginning to confirm the above prediction.

HISTORIC

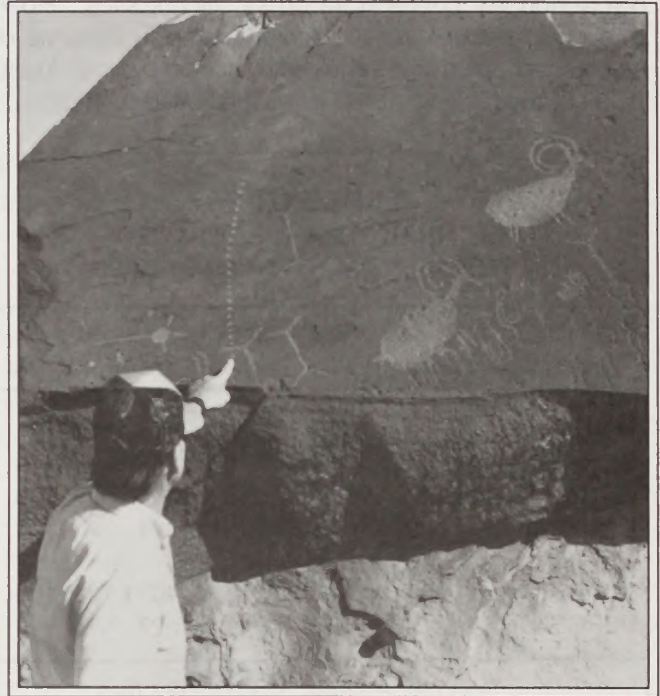
The two significant historic sites on the Arizona Strip are the Honeymoon Trail and the Temple Trail. The point of origin for both of these trails is the LDS Temple in St. George, Utah and their history is entwined with different aspects of the LDS religion.

The Temple Trail connects St. George to the old saw mill sites on Mt. Trumbull. The saw mills and trail were set up and built in 1872 to transport lumber to the temple, 80 miles northeast to St. George. The Temple Trail goes east from St. George to Fort Pierce and then up a dugway built through the Hurricane Cliffs. Once on top the trail runs south to Mt. Trumbull.

The Honeymoon Trail, built in 1872, also originates from the St. George Temple and runs east along the same route as the Temple Trail until cresting the Hurricane Cliffs at Antelope Spring. There the Honeymoon Trail turns east to Lee's Ferry on the Colorado River, 130 miles from St. George.

Other trails of import on the Arizona Strip include: the Dominguez & Escalante (D&E) Trail of 1776, Jedediah Smith's Trail along the Virgin River, the Old Spanish Trail, and other minor ones. Many of these early trails followed established Indian trails. These trails are not marked, as their location is not exactly known.

Antelope Cave on the Uinkaret Plateau was listed on the National Register of Historic Places (NRHP) in 1975. Two historic trails and two archaeological districts on the Arizona Strip have been nominated and determined eligible for the NRHP in 1976. These are the Paria Plateau Archaeological District (70,000 acres and 416 sites), Mount Trumbull Archaeological District (18,250 acres and 72 sites), and the Temple and Honeymoon Trails. Many other recorded archaeological sites are known to be potentially eligible for nomination to the NRHP.



Little Black Mountain petroglyphs.

VEGETATION

The Arizona Strip District RMP area is made up of several vegetation types (Map III-9). Table III-10 describes each vegetation type, percent of the district covered by the type, associated species, the typical elevation of occurrence, and the average annual precipitation. Appendix 2 presents a discussion on vegetation trend relative to grazing management and climate.

At present, BLM is conducting ecological site mapping and descriptions. This information will be used to determine objectives for vegetation management for various management units (watersheds, grazing allotments, ACECs, etc.). Ecological site inventory information will be useful in identifying desirable plant communities for ecological sites. Management of the various activities that affect vegetation will then be guided toward meeting these objectives.

TABLE III-10
CHARACTERISTICS OF VEGETATION TYPES ON THE ARIZONA STRIP DISTRICT

Type	% Of District (Federal)	Associated Species (Common Name)	Elevation (FEET)	Annual Precip. (INCHES)
Pinyon-Juniper	25	Pinyon, juniper, sagebrush, cliffrose, blue grama, galleta grass, Indian ricegrass, squirreltail, ring muhly	4500-8000	10-20
Grassland	22	Blue grama, galleta grass, squirreltail, Indian ricegrass, crested wheatgrass, Russian wildrye	4000-5000	5-12
Desert Shrub	19	Blackbrush, shadscale, ephedra, buckwheats, wolfberry, yucca	2500-5000	5-12
Sagebrush	17	Big sagebrush, sandsage, fringed sage, black sagebrush, Bigelow sage, squirreltail, Junegrass, western wheatgrass, blue grama, galleta grass, ephedra, cliffrose, fourwing saltbush	3000-8000	8-16
Saltbush	5	Fourwing saltbush, blue grama, galleta grass, sacaton, shadscale	3000-6000	5-12
Half Shrub	3	Snakeweed, blue grama, galleta grass, shadscale	3000-6000	5-12
Creosotebush	3	Creosote, bursage, range ratany, big galleta, yucca	2500-4000	5-10
Mountain Shrub	1	Oak, serviceberry, mountain mahogany, bluegrasses	5000-8000	15-25
Blackbrush	1	Blackbrush, snakeweed, range ratany, galleta, Indian rice- grass, ephedra, yucca		
Riparian	1			
Shadscale	1	Shadscale, galleta grass, blue grama, fourwing saltbush	3000-4500	5-10
Conifer	1	Ponderosa pine, cliffrose, blue grama, Arizona fescue, bitterbrush, sagebrush	6000-8000	15-25
Annuals	1	Cheatgrass, Russian thistle	4000-6000	5-12

Source: Arizona Strip District files

WATERSHED RESOURCES

During the 1970s, the Arizona Strip District carried out the Phase I Watershed Conservation and Development Inventory (WC&DI). From this inventory erosion condition classes were determined districtwide by transects using the Soil Surface Factor method (SSF) (Appendix 26 and Map III-10). Table III-11 summarizes this data

TABLE III-11
EROSION CONDITION CLASSES
(FEDERAL ACRES)
ON THE ARIZONA STRIP DISTRICT

Stable	Slight	Moderate	Critical	Severe	Total
1%	37%	54%	7%	1%	100%

Source: Arizona Strip District files

The district also used a method developed by the Pacific Southwest Inter-Agency Committee (PSIAC) to estimate sediment yield from large areas. Each allotment was transected in several areas and an average sediment yield was calculated for each allotment and listed in both the Vermillion and Shivwits Grazing EISs.

From the late 1970s to the present, the Soil Conservation Service has been conducting an Order III Rangeland Soil Survey for the district. The survey has been completed on the Vermillion Resource Area and is currently being conducted on the Shivwits Resource Area. Complete and draft data is available at the district and area offices.

BLM has used the SSF and PSIAC information along with the soil survey, information vegetative inventories and professional experience to evaluate the watershed condition for each allotment on the district. This evaluation considered current erosion conditions, erosion hazards and the soil moisture/temperature regime. To facilitate management, watershed conditions were evaluated on grazing allotment boundaries rather than watershed boundaries. However, when actual watershed management recommendations are made they will be made by soil type or geomorphologic position.

Watershed condition has been evaluated on each grazing allotment in the district. Each allotment was then placed in one of the four categories described in Table III-12. Over 36 percent of the district is in category IV, unsatisfactory erosion condition, and the soils would be responsive to treatment.

TABLE III-12
WATERSHED CATEGORIZATIONS
ON THE ARIZONA STRIP DISTRICT

Category	Description	Federal, State, & Private Acreage in the RMP Area
I	Watershed units are in satisfactory erosion condition and are not especially susceptible to wind and water erosion.	808,000
II	Watershed units are in satisfactory erosion condition but are susceptible to wind and water erosion following disturbance.	1,226,000
III	Watershed units currently are in unsatisfactory erosion condition but because of the soil temperature /moisture regime these soils would be unresponsive to treatment.	0
IV	Watershed units currently are in unsatisfactory erosion condition and the soils would be responsive to treatment.	1,188,000

Source: Arizona Strip District files

The purpose of categorizing these allotments is to identify existing or potential problem areas and set priorities for watershed rehabilitation work. Maps II-13, II-14 and II-15 show watershed category areas and Appendix 14 lists allotments in each category.

Watersheds in either category I or II are currently in satisfactory or better erosion condition. These watersheds are now functioning properly.

The salinity of soils was a classification criteria in this categorization. The relationship between erosion condition salinity and sediment yield was inferred. A highly eroded saline watershed will carry more salt downstream. This becomes important in planning management for erosion-prone watersheds or allotments (Map III-11).

Two watershed activity plans exist. The Fort Pierce community watershed plan addresses the Fort Pierce drainage basin, which extends into Hurricane, Mainstreet, and Clayhole valleys.

In addition to these activity plans, several other watershed activity plan needs have been identified: Hobble Canyon, Johnson Run, Lower Lang's Run, Wolf Hole Valley, Upper Bull Rush Wash, and Lower Hurricane Valley. These watershed areas have been identified as having the most severe watershed conditions. Due to funding constraints and other priorities, they have not yet been written. There is also one paired plot erosion study going on in Hidden Hills. This study is measuring the soil loss from the same soil type, one plot under grazing and one not being grazed. Once this data is collected it can be used with the Universal Soil Loss Equation (USLE) for comparative analysis and transfer.

WATER RESOURCES

The district has been conducting water source inventories since the early 1980's. This inventory included field surveys of stockponds, springs, seeps, potholes, playas, wells, and perennial stream systems. For the most part, the field inventory is complete. However, much of the data still requires incorporation into the Bureau's Water Data Management system. There are approximately 880 stockponds 350 springs and seeps, three playets, six potholes, and 70 wells. The district has three perennial streams that are longer than 1/2 mile: Kanab Creek, Virgin River, and the Paria River. Most of the springs flow less than a few hundred feet and have been developed for livestock, wildlife, recreation, and/or administrative use. Spring flow is generally 3 to 5 gallons/minute. The regional ground water table is deep, generally greater than 2,500 feet below the surface in the Redwall/Muav limestone contact. There are a few small perched groundwater tables that have been developed, but little is known about their extent. Their source of recharge is thought to be from runoff in local, usually dry washes.

Most of the district is comprised of a network of ephemeral washes which only run in direct relationship with the amount of rain that falls. Fall and winter storms are usually gentle and summer rainstorms are usually short duration, but often intense. The present drainage pattern is generally a function of these intense summer storms.

WATER QUALITY

BLM's management objective for water quality is to ensure that all waters on public lands meet or exceed federal and state water quality standards. These standards typically include sediment loads, turbidity, PH, trace metals, total dissolved solids (TDS), and bacterial levels.

Groundwater quality information is not abundant on the district. Groundwater quality varies widely throughout the resource area depending on the type of aquifer and geologic formation from which it originates.

Water quality data has been collected on many of the springs located within the resource area. Generally they are tested for total dissolved solids. This has been used to indicate mineral concentration and palatability for livestock consumption. TDS levels normally increase with the distance from the recharge area and are less in the more permeable aquifers. The water that is derived from deep wells (Muav limestone) is generally very good and meets state drinking water standards. Groundwater from shallow aquifers is generally high in TDS and alkalinity and generally does not meet state drinking water standards for human consumption. They are considered acceptable for livestock and wildlife use.

There are several sources of water quality and quantity information on the three perennial streams within the district. Paria has a USGS stream gauge in the Lee's Ferry area. The National Park Service, BLM, and the Arizona Game and Fish Department have data on water quality, fisheries, and aquatics. Kanab Creek has a USGS stream gauge in Utah and has several years of very comprehensive water quality data on six separate sites. This data has been gathered by Energy Fuels Nuclear as part of their baseline studies for their mining program. The Virgin River has water quality and flow data gathered by the City of St. George in Utah, a USGS stream gauge, and various levels of water quality data gathered by the U.S. Fish and Wildlife Service.

AIR RESOURCE

All of the airsheds on the district are managed as class II by Prevention of Significant Deterioration Regulations (PSD) as mandated by the National Ambient Air Quality Standards (NAAQS) as defined in the Clean Air Act. There are no designated non-attainment areas on the district. The bordering land managed by the National Park Service is managed as class I.

Fugitive dust emissions and smog from large metropolitan areas are the main source of pollution on the district. Dust is generated by the erosive force of winds blowing across the desert, coming from disturbed areas generally associated with road systems. Fugitive dust is excluded from the evaluation of air quality. Smog is blown in from metropolitan areas southwest of the district (Los Angeles, Las Vegas, and Phoenix). Point-source

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emissions come from the burning of landfills at Mesquite and Colorado City. They cause localized air pollution due to the release of toxic particles and gases from burning.

No full time measurements of air quality are being made on the district at this time. The Salt River Project

has been conducting air quality and visibility studies in the area for a number of years. They currently have a time lapse camera located on Mt. Trumbull. Table III-13 shows some one-year evaluations made on the district plus some full-time state-station data.

TABLE III-13
AIR POLLUTANT ANNUAL AVERAGES AND MAXIMUM
SHORT-TERM CONCENTRATIONS MEASURED BY REGION

Pollutants	Averaging Time	Measured Concentrations in Micrograms/m3 or RPM (noted)						
		State Sites						EFNI Site
		1975	1983		1986			1983-1984
		Warner Valley	Page/a	Grand Canyon	Page/d	Grand Canyon	Glen Canyon Dam/e	Top
SO ₂	Annual	-	6	-/c	-	-	7	-
	24-hour	0.05	92	-	-	-	32	-
	3-hour	0.25	324	-	-	-	112	-
TSP	Annual/b	-	41	5	35	10	14	14
	24-hour	32	141	58	131	31	39	59
NO ₂	Annual	.00009 ppm	8	-	-	-	6	-
CO	8-hour	-	-	-	-	-	-	-
	1-hour	-	-	-	-	-	-	-
O ₃	1-hour	-	137	137	-	-	0.10 ppm	-

SOURCES: Arizona Bureau of Air Quality Control (ABAQC) (1984), Energy Fuels Nuclear, Inc. (EFNI) (1984), Allen-Warner Valley Project (1975), Dames and Moore EA (1986), Arizona Department of Environmental Quality (1986)

a/ Page concentrations measured by Salt River Project Instrumentation

b/ Geometric

c/ "--" means no data available

d/ Average between Salt River Project and State Instrumentation

e/ Glen Canyon Dam by Salt River Project Instrumentation

Refer to the Shivwits and Vermillion MSAs for more information on air quality.

SPECIAL STATUS SPECIES

The Arizona Strip is home for many special status plant and animal species. Species lists and information on habitat, populations, and association with riparian areas are included in the following appendices:

(1) Appendix 15 includes state special status animals and plants that occur or could occur in the RMP area;

(2) Appendix 16 includes federally-listed and candidate plant and animal special status species;

(3) Appendix 27 provides additional information on category 2 candidate species and

(4) Appendix 28 provides additional information on special status animals and important and sensitive wildlife species associated with riparian areas.

SPECIAL STATUS PLANT SPECIES (MAP III-12 AND APPENDIX 29)

Brady Pincushion Cactus

(*Pediocactus bradyi*)

Federally-listed: Endangered

Brady pincushion cactus, was listed in 1979, as prospecting, mining, livestock trampling, collection of plants, and off-highway vehicles were threats to the population. BLM administers about 11,000 acres of known habitat for this species.

The habitat of this species is on the rims of the plateaus along the Colorado River in House Rock Valley. BLM has several plots established wherein about 600 cactus are tagged to determine the effects of the above threats to the population. U.S. Fish and Wildlife Service (FWS) developed a recovery plan and BLM developed a habitat management plan (HMP) for the species.

Siler Pincushion Cactus

(*Pediocactus sileri*)

Federally-listed: Endangered

This plant was also listed in 1979, as endangered. Prospecting, mining, livestock trampling, collection of the plants, and off-highway vehicles were identified as possible threats.

The distribution of *P. sileri* occurs at scattered locations near the Arizona-Utah border. This area consists of

a total of 330,000 acres. The eastern edge of the species potential habitat boundary occurs in the vicinity of Fredonia in Coconino County, Arizona until it reaches its western limit just southwest of St. George, in Washington County, Utah. It is much more wide-spread than believed at the time of listing.

The distribution of *P. sileri* appears to be strongly related to the Shnabkaib Member of the Moenkopi Formation. This cactus is found exclusively on gypsiferous clay to sandy soils. It is sometimes found on nearly identical appearing members of the Kaibab Formation. These soils are high in soluble salts.

This plant is also being studied to determine the population trend, level of threats and their impact on the biology of the plants. The FWS developed a recovery plan and BLM developed an HMP for this species.

Fick Cactus

(*Pediocactus peeblesianus* var. *fickeiseniae*)

Proposed for Federal listing, Category 1

Under internal policy, BLM manages its habitat as if it were under the full protection of the ESA. Arizona State University's Botany faculty is currently carrying out chromosome studies to determine if this variety is different from *peeblesianus* var. *peeblesianus*.

Bristly Plains Cactus

(*Pediocactus paradinei*)

Proposed for Federal listing, Category 1

This cactus occurs mostly on the Kaibab National Forest which has ongoing studies on this plant. BLM protects this species where it occurs from land use activities through clearance and conservation efforts as required by the NEPA process. It is found in House Rock and Coyote Valleys.



SPECIAL STATUS ANIMAL SPECIES

Woundfin Minnow

(*Plagopterus argentissimus*)

Federally-listed: Endangered

The woundfin minnow was placed on the federal endangered species list by the FWS on October 13, 1970 because of its elimination from all other streams in its native range except the Virgin River. Woundfin range from LaVerkin Springs on the mainstream of the Virgin River and the lower portion of LaVerkin Creek in Utah downstream to Lake Mead. Twelve miles of habitat occur on the Arizona Strip managed Virgin River. The confluence of the Virgin River with Beaver Dam Wash is the most productive woundfin habitat in Arizona. Distribution of woundfin shows a strong preference for swift, shallow, stream runs with sandy bottoms within streams having turbid waters.

The 1989 Quail Creek flood on the Virgin River appears to have substantially altered the river ecosystem. Although this is likely a temporary phenomenon, it could have substantial effects on the habitat for fishes.

Objectives for the management of the woundfin minnow is to delist the woundfin through conservation of existing habitats and populations through the establishment of at least two additional self-sustaining wild populations in their native ecosystems other than the Virgin River. This would be done through a coordinated effort between BLM, FWS, Arizona Game and Fish Department (AGFD), and Utah Department of Wildlife Resources (UDWR).



Virgin River Roundtail Chub

(*Gila robusta seminuda*)

**Proposed for Federal listing: Endangered;
State-listed: Endangered**

The chub is currently proposed by the FWS as an endangered species and its habitat proposed as critical. The AGFD lists the chub as an endangered species which

means extinction from the state is highly probable if no recovery efforts are made. Like the woundfin minnow, the Virgin River roundtail chub is also restricted to the Virgin River between LaVerkin, Utah and Mesquite, Nevada.

The chub population appears in much more serious condition than any other species in the Virgin River. The chub population has decreased drastically in the last 100 years and appears to be in danger of extinction. The prime factor in their decline could be related to reduction in flow of the Virgin River due to diversion for off-stream uses. Recent data indicate the chub may require several times the mean flow that woundfin require. Flow reservations for woundfin are inadequate for chub.

BLM objectives for the management of the Virgin River roundtail chub is the same as for woundfin minnow, to improve the habitat and population levels to a point the species need not be listed.

Virgin River Spinedace

(*Lepidomeda mollispinis mollispinis*)

**Candidate for Federal listing;
State-listed: Endangered**

The Virgin River spinedace, a candidate for listing by the FWS, is also considered to be an endangered species by the AGFD. This means if no successful recovery efforts are made, extinction from the state is highly probable.

The range of the Virgin River spinedace is limited to the Virgin River of Utah and Arizona. It is restricted to tributaries or in the mainstream at the mouth of tributaries. The dace prefers cool, clear, swift moving water and a bottom substrate of rubble, cobbles, or sand. Modifications of the river system lead to a deterioration of the spinedace habitat and subsequent population decrease. Effects of the Quail Creek flood on long term habitat quality are not known at this time.

The BLM objectives for this species are to maintain habitat conditions to support viable populations such that the species need not be listed.

A major threat to all three of these Virgin River endemic species is the red shiner which is an introduced bait fish that has migrated into the Virgin River from Lake Mead. The shiner intensively competes for food and space and before the Quail Creek Flood (January 1, 1989) seriously depleted the sensitive species populations. A red shiner control effort was conducted in 1988 with inconclusive results.

Desert Tortoise
(*Xerobates agassizii*)
Federally-listed: Endangered

The U.S. Fish and Wildlife Service has listed the desert tortoise population in the Mohave desert as endangered under provisions of the Endangered Species Act (ESA). This includes all of the tortoise habitat on the Arizona Strip District. The tortoise remains a candidate for state-listing by AGFD (species which may become threatened or endangered). Reports of declining populations have generated concern about the future of this species throughout its range. As of January 1, 1988, the season for taking tortoises in Arizona was closed. Those tortoises in captivity as of that date may be held in captivity. Off-spring may be kept for 24 months before being given to another person or to the AGFD. The federal endangered species status will affect this state regulation.

Tortoises are yearlong residents in the Arizona Strip. They occupy areas defined by the limits of the Mohave desert vegetative associations and are found below the 3,800-foot elevation level. In the Mohave desert west of the Beaver Dam and Virgin Mountains and in the Pakoan Basin, historic and potential tortoise range occupies some 350 square miles of the Arizona Strip. The majority of this area (85 percent) is public land. Estimated tortoise densities of 25-50/square mile exists along the Arizona side of the border with Nevada in the Pakoan area.

Densities are generally higher on the Beaver Dam Slopes than the Virgin Slopes, with the Pakoan densities lowest of all. There are several concentrated high densities in limited acreages in the Pakoan where habitat conditions are excellent. The highest tortoise concentrations on the Beaver Dam Slopes occur in creosote-dominated areas. The creosote-Joshua tree association in the Pakoan appears to support moderate numbers.

The BLM has been and is currently conducting and cooperating in various studies of tortoise habitat, health and management factors to improve the base of knowledge for management.

The BLM management objectives for this species are outlined in the Rangewide Plan for Desert Tortoise Habitat Management on the Public Lands.

Since the listing of the tortoise as an endangered species within the Mohave desert occurred after the rangewide plan was approved, that plan will serve to guide management to avoid a "may affect" situation.



The bureau's responsibility to manage the tortoise resource is set forth in FLPMA which states in part;

The congress declares that it is the policy of the United States that management be on the basis of multiple use and sustained yield unless otherwise specified by law. In this case, the Endangered Species Act has precedent over our multiple use mandate. The ESA requires that the bureau does not authorize, fund or conduct any activity that threatens the continued existence of the desert tortoise.

The following is a list of actions found in the range-wide plan that represent where the district intends to go during the coming decade.

- Provide appropriate input into fire management plans to minimize the effects of wildfires on tortoise habitats.

- Use the bureau's exchange authorities as opportunities arise to consolidate tortoise habitats on the public lands, with emphasis on category I and II tortoise habitat areas (Map II-16).

- Purchase category I and II tortoise habitat areas consistent with the scope and intent of bureau planning documents.

- Encourage private donations of land, funds, and services to facilitate acquisition of land with high tortoise habitat values.

- Retain category I and II tortoise habitat areas unless (a) it clearly is in the national public interest to dispose of them and (b) losses can be mitigated.

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- Manage issuance of rights-of-way in a manner that minimizes effects on tortoise populations and habitats.

- Grant new rights-of-way through category I and II tortoise habitat areas only if no reasonable alternative exists. Mitigation for habitat losses is required.

- Mitigate along rights-of-way to minimize direct losses of tortoises, fragmentation or reduction of habitat, and the effects of construction.

- Where necessary to achieve category goals, close category I and II tortoise habitat areas to off-highway vehicle use. Use outside of closed areas can be allowed provided it is not inconsistent with the category goals and objectives of this rangewide plan.

- Minimize off-highway vehicle use in category I and II tortoise habitat areas whenever information for decision making is adequate. This may include restriction of organized and casual off-highway vehicle use to designated roads and trails, restriction of such use to existing roads and trails, placing limits and conditions on the authorization of commercial and competitive events, etc.

- In every grazing allotment which includes tortoise habitat, manage livestock to allow adequate and suitable native forage, space, and cover to be available to tortoises throughout the year.

- Allow only those new range improvements for livestock in category I and II habitat areas which will not create conflicts with tortoise populations. Mitigation for such conflicts is permissible to make the net effect of the improvements positive or neutral to desert tortoise populations. Conflicting existing improvements should be eliminated as opportunities arise.

- Continue to maintain appropriate management levels of wild horses and burros consistent with existing land-use plans and/or activity plans.

- Allow only those new range improvements for wild horses and burros in category I and II habitat areas which will not create conflicts with tortoise populations. Mitigation for such conflicts is permissible to make the net effect of the improvements positive or neutral to desert tortoise populations. Conflicting existing improvements should be eliminated as opportunities arise.

- Evaluate bureau actions to determine whether or not they encourage proliferation or range expansion of predator populations. Seek alternatives which minimize the increase and/or spread of predator populations.

- Consider withdrawal from mineral entry for category I tortoise habitat areas.

- Mitigate the impacts to desert tortoise habitat areas from locatable mineral exploration and development to the extent possible through judicious implementation of the bureau's 3802 and 3809 surface management regulations.

- Use the bureau's discretionary authorities relating to leasable and salable minerals to meet the category goals and objectives of this rangewide plan.

- Mitigate the impacts of energy and mineral development in tortoise habitat to the extent possible under existing laws and regulations.

Within the past two years, BLM has acquired 1,600 acres of proposed category I and II tortoise habitat.

Peregrine Falcon

(Falco peregrinus anatum)

Federally-listed: Endangered

The American peregrine falcon is found on the Arizona Strip and may inhabit the area yearlong. Recorded data on population numbers, trend, ecology, and habitat use patterns is lacking. Several eyries have been identified and many others are suspected. The birds themselves have been observed and reported on numerous occasions on the district over the past twenty years. Peregrines have been documented as occurring in Paria Canyon, Vermillion Cliffs, Kanab Canyon, Hack Canyon, near Fredonia, Marble Canyon, House Rock Valley, Lee's Ferry and the Hurricane Cliffs, the Virgin Mountains, Parashant Canyon, Andrus Canyon, and the Upper Grand Wash Cliffs. Peregrine habitat occurs throughout the district.

A five-year cooperative peregrine falcon survey was initiated in 1988 and indicates that peregrine nesting and use of the district has increased in that last year. Eight nest sites were identified in 1989 as compared to four in 1988.

Bald Eagle

(Haliaeetus leucocephalus)

Federally-listed: Endangered

Bald eagles occur rarely on the Arizona Strip during winter. This bird utilizes the Arizona Strip as a "stop over" while in migration.

RIPARIAN AREAS

Riparian areas are a form of wetland transition between permanently saturated wetlands and upland areas. These areas have visible vegetation or physical characteristics reflective of permanent surface or subsurface water influence. Lands along, adjacent to, or contiguous with perennially and intermittently flowing rivers and streams, and the shores of lakes and reservoirs with stable water levels are typical riparian areas. Excluded are such sites as ephemeral streams or washes that do not exhibit the presence of vegetation dependent upon free water in the soil.

On the Arizona Strip, riparian associated vegetation includes cottonwood, willow, tamarisk, arrowweed, ash, cattails, rushes, and sedges as well as a variety of grasses and forbs.

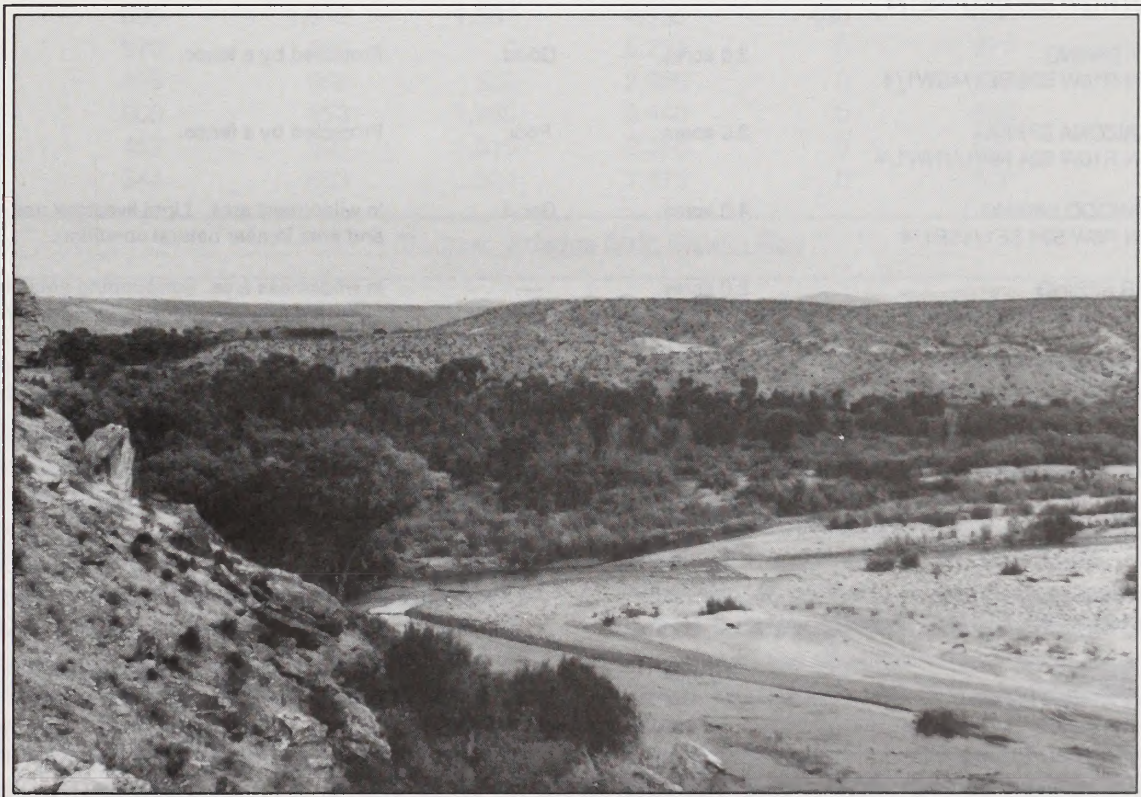
Although accounting for less than one percent of the district's land area, riparian areas are among the district's most productive and important ecosystems. Characteristically, riparian areas have a greater diversity of plant and animal species than adjoining areas. Healthy riparian systems filter and purify water as it moves through them, reduce sediment loads and enhance soil stability, provide microclimatic moderation when contrasted to extremes in adjacent areas, and contribute to groundwater recharge and base flow.

Priority riparian areas on the Arizona Strip are listed in Table III-14 and shown on Map III-13. Only areas greater than two surface acres or with flows extending more than 1,000 feet are included. A comprehensive riparian/wetland inventory will be conducted to identify condition and status of potential riparian areas. Appendix 20 lists wildlife species dependent upon riparian habitat.

Currently, most major springs and their wet areas are fenced and excluded from livestock grazing. Occasionally gates are left open.

The three significant streams on the Arizona Strip have received management attention since the completion of the grazing EISs. The Paria River in Arizona, where the allotment (Lee's Ferry allotment) is suitable for grazing, is under a rest-rotation grazing system. This area is completely within the Paria Canyon/Vermilion Cliffs Wilderness and is grazed two years during the winter and rested the next year. Grazing use was also reduced approximately 60 percent and season-of-use changed from yearlong to winter. All allotments but one, along the Virgin River, are under a deferred grazing system. On New Year's Day of 1989 the Quail Creek Reservoir in Utah breached, causing a major flood of the Virgin River system and extensive damage to the riparian vegetation.

Kanab Creek allotment grazing use was reduced 11 percent and the season shortened one and one-half months from October 15 to April 30.



Riparian vegetation at the confluence of Beaver Dam Wash and the Virgin River.

TABLE III-14
PRIORITY RIPARIAN AREAS ON THE ARIZONA STRIP DISTRICT 1/

Riparian Areas Name and Legal Description	Approximate Size/Length	/2 Condition	Management
VIRGIN RIVER T41N R12/13/14/15W T40N R15/16W	29 miles	Fair	Partially in wilderness area and protected by the Virgin River Gorge Scenic Withdrawl. The flood of January 1989 caused extensive damage to riparian vegetation.
BEAVER DAM WASH T40N R15W S4 E1/2 NW1/4 NE1/4SW1/4	50 acres	Good	Area not grazed. Damaged by the January 1989 flood.
PARIA RIVER T41N R6/7E	24.7 miles	Fair	In wilderness area and under a rest-rotation grazing system.
KANAB CREEK T38/39N R3W	12.5 miles	---	Livestock grazing reduced in numbers and season following grazing EIS.
BITTER SEEP WASH T39N R4W S4,6,7,8,9,16,17,18 T40N R4W S31	9 miles	Poor	Livestock grazing adjusted from yearlong to a deferred rotation system which is being implemented following grazing EIS.
SULLIVAN SPRING T39N R14W S10 NW4	2.5 acres	---	In wilderness area and protected by a fence.
GATES-MULLEN SPRING T39N R14W S3 NW4	5.0 acres	---	In wilderness area and protected by a fence.
BUCKHORN SPRING T34N R16W S26 SE1/4NE1/4	2.0 acres	Poor	Protected by a fence.
GRAPEVINE SPRING T34N R16W S26 NE1/4NE1/4	2.0 acres	Fair	Protected by a fence.
WHISKEY SPRING T34N R16W S26 SE1/4SW1/4	3.0 acres	Good	Protected by a fence.
LITTLE ARIZONA SPRING T34N R16W S24 NW1/4NW1/4	2.0 acres	Poor	Protected by a fence.
COTTONWOOD SPRING T42N R6W S34 SE1/4SE1/4	4.0 acres	Good	In wilderness area. Light livestock use and area in near natural condition.
WRATHER SPRING T41N R6E S8 SW1/4SW1/4	2.0 acres	---	In wilderness area. Surrounding area not allocated to grazing due to topography.
BADGER CREEK SPRING T40N R6E S12 NE1/4NW1/4	2.0 acres	---	In wilderness area. Surrounding area not allocated to grazing due to topography.
RED ROCK SPRING T36N R16W S5 SE1/4NE1/4	.5 acres	---	Protected by a fence.
MIDDLE SPRING T36N R16W S7 NE1/4SE1/4	2.0 acres	---	Protected by a fence.
CANE SPRING T38N R14W S34 NE1/4	5 acres	---	Fenced from allotment and grazed by few horses.
POCUM WASH T38N R14W S14,24	3.0 mile	---	Partially in a wilderness area. Allotment management plan has been drafted.

Source: Arizona Strip District files

1/ Only areas greater than two surface acres or with flows extending more than 1,000 feet are listed.

2/ Based on a one-time macro-invertebrate sample with ratings provided by Aquatic Ecosystems Analysis Laboratory-USDA Forest Service.

FOREST/WOODLAND RESOURCES

As shown in Table III-10, the Arizona Strip has a large percent of pinyon-juniper woodland. There exists a smaller acreage of ponderosa pine (Map III-14).

PONDEROSA PINE

The Arizona Strip District has approximately 15,200 acres of land with varying densities of ponderosa pine forests. Within that acreage, areas of commercial forest exist. Commercial forest land are capable of yielding at least twenty cubic feet of wood per acre per year of commercial tree species.

The Mt. Trumbull/Mt. Logan areas have 7,266 federal acres of commercial ponderosa pine forest and Parashant has 1,940 acres.

Due to several economic and environmental factors there has not been any harvesting since the 1960s for the timber resources in the above locations. There is now interest and proposals to harvest timber on the Uinkaret Mountains.

PINYON-JUNIPER WOODLANDS

No intensive woodland inventory exists for near 800,000 acres of pinyon-juniper. However, significant wood harvesting takes place in the woodlands. Woodland sales are shown in Table III-15.

Most of the cutting of green, dead and down wood occurs in the Wolf Hole to Black Rock corridor, White Sage-Suicide area, Buckskins, and areas north of Mount Trumbull. The bulk of the permittees are local residents cutting fuelwood and fence posts for their needs.

TABLE III-15
Authorized Woodland Sales On The Arizona Strip District

Year	Permits	Fuelwood Fee (Cords)	Fuelwood Free (Cords)	Number Of Posts	Number Of Poles	Christmas Trees	Receipts
1983	696	1,012	1,381	4,595	400	696	\$6,062
1984	370	1,168	0	5,224	0	677	\$6,297
1985	428	969	652	2,965	0	415	\$5,912
1986	609	653	1,965	3,440	0	566	\$5,651
1987	457	694	1,015	2,350	0	635	\$5,554
1988	344	683	324	1,475	0	570	\$5,430

Source: Arizona Strip District files

GRAZING MANAGEMENT

The Arizona Strip District has 135 permittees and 164 grazing allotments. There were 153,840 animal unit months (AUMs) of authorized grazing use on these allotments in 1987. (AUM = the amount of forage necessary for sustenance of one cow or its equivalent for a period of one month.) Forage allocation for wildlife species is 27,530 AUMs. The dominant kind of livestock is cattle, with 23,485 animal units. There are also 192 horses authorized to graze on the district. The overall objective of the rangeland management program is to manage the Arizona Strip District vegetation communities to meet ecological condition objectives.

Public rangeland grazing on the Arizona Strip District is guided by findings of the Shivwits and Vermillion Grazing Management Environmental Impact Statements (BLM, 1979), ongoing rangeland monitoring studies, and allotment categorization priorities. Since the Shivwits Grazing EIS was finalized, provisions and considerations necessary to manage livestock grazing operations in desert tortoise habitat have been implemented. The changes in the operations have been made to provide forage for tortoise, rest in the critical spring green-up period, and to locate projects where they would have the least amount of adverse impact, if any. Allotment management plans (AMPs) are still needed in some of the

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allotments that contain desert tortoise habitat. Appendix 1 shows each allotment in the district by category with current and proposed management.

The three categories of management priority for allotments are: "I" for improve, allotments that have highest need and priority for intensive management; "M" for maintain, allotments where condition and management are satisfactory; "C" for custodial, allotments with low management priority for varying reasons. Appendix 3 includes definitions and criteria for each category. Table III-16 summarizes allotment categories.

The Arizona Strip District has two types of AMPs. They are the intensive and the less-intensive plans. Intensive plans involve grazing systems such as rest-rotation, Holistic Resource Management (HRM), deferred rotation, and best pasture systems. Intensive AMPs have cooperatively funded rangeland improvements planned which are necessary to implement the grazing systems. Intensive systems set a constraint of no greater than 50 percent utilization on key forage species. Table III-17 summarizes allotment grazing systems. Vegetation conversion practices including prescribed fire are used in conjunction with grazing management on category I allotments to achieve rangeland management objectives.

Less-intensive grazing systems allow the rancher to operate seasonally but forage species utilization is limited to a maximum average of 45 percent. The permittee finances range improvements on public lands or cooperates with BLM in construction projects.

**TABLE III-16
ALLOTMENT CATEGORIZATION SUMMARY
ON THE ARIZONA STRIP DISTRICT**

(see Appendix 3: Allotment Categorization Criteria)

	Improve (I)	Maintain (M)	Custodial (C)
Allotment Numbers	79	54	31
Percent of Acreage	58	37	4

Source: Arizona Strip District files

**TABLE III-17
CURRENT AND IMPLEMENTED
ALLOTMENT GRAZING SYSTEMS
ON THE ARIZONA STRIP DISTRICT**

Grazing System	Number of Allotments
Rest Rotation	13
Deferred Rotation	54
Holistic Grazing Mngt.	1
Best Pasture	2
Season-Long	82
Less-Intensive	12

Source: Arizona Strip District files

WILD, FREE-ROAMING BURROS

The Wild and Free-Roaming Horse and Burro Act became law on December 15, 1971, authorizing the management of wild horses and burros on public land by BLM. The Act provided that wild and free-roaming horses and burros are protected from unauthorized capture, branding, harassment, or death. They are to be considered an integral part of the natural system based upon their 1971 distribution.

Some 380 burros roam freely on lands administered by the Arizona Strip and Las Vegas BLM Districts and Lake Mead National Recreation Area (LMNRA), administered by the National Park Service (NPS). They are managed on public lands through the Tassi-Gold Butte Herd Management Area Plan (HMAP) completed in 1982 (Map III-15). Initial management goals are to maintain a population level of 90-100 animals in the Arizona portion. The critical habitat area for the burros covers some 194,000 acres, 51,000 acres of BLM lands and 143,000 acres on LMNRA. The Arizona burros occupy the Lower Grand Wash Cliffs, Grand Wash Bay of Lake Mead, and the Tassi Spring area. The Shivwits MFP allocated 600 AUMs of forage to burros.

Burros generally inhabit areas having permanent water. Most of the burros stay within 3 miles of Lake Mead or near several springs in Lower Grand Wash. Cattle also tend to concentrate near these water sources. Excluding Lake Mead, a moderate degree of competition for forage and water resources exist between burros, cattle, mule deer, and bighorn sheep where their ranges overlap.

WILDLIFE HABITAT

The Arizona Strip District has habitats for a wide variety of wildlife species. Wildlife habitat is currently being managed in accordance with six wildlife HMPs that cover the entire district (Map III-16). Habitat improvements have been carried out over many years and include burning, chaining and seeding of decadent habitat areas. Water has been made available for wildlife through construction of about 140 catchments, reservoirs, and spring developments. Livestock waters are also designed to accommodate wildlife use. Wildlife habitat monitoring studies are conducted to assess the results of management towards meeting wildlife objectives.

In cooperation with Arizona Game and Fish Department, several species of wildlife have been transplanted to new and to former ranges. These include pronghorn antelope, desert bighorn sheep, Kaibab squirrel, Merriam's turkey and most recently, mule deer. Important wildlife species are:

Pronghorn Antelope (*Antilocapra americana*)

Within the district pronghorn inhabit 756,000 federal acres within three major valleys; Clayhole, Mainstreet, and House Rock. Populations as of January 1989 are estimated in Table III-18.

TABLE III-18 PRONGHORN HABITATION AREAS ON THE ARIZONA STRIP AS OF JANUARY 1989		
Habitat Area	# of Pronghorn	Remarks
Clayhole	250-270	Some interchange between the Clayhole and Mainstreet herds is known to take place.
Mainstreet	192	
House Rock Valley	120	
Source: Arizona Strip District files		

Pronghorn are native to the Arizona Strip and were reported as common by early residents. Pronghorn were apparently eliminated from the Strip in the early 1900's. Reintroductions were initiated in 1961 and have continued on a periodic basis up to the present.

The existing Clayhole and Paria-Kanab Creek HMPs provide management direction for pronghorn habitat on

public land. Management actions to help restore pronghorn to their former ranges within the Arizona Strip include modifying fences to allow pronghorn movement, improving forage species composition and diversity, modifying fences around waterlots to accommodate pronghorn access, and developing and/or making available water sources for pronghorns. Most water sources planned to date have been completed for the pronghorn. Map III-17 shows pronghorn antelope habitat.

Desert Bighorn Sheep (*Ovis canadensis nelsoni*)

With the exception of occasional sightings, bighorn sheep were believed eliminated from the Arizona Strip around the turn of the century.

In a cooperative effort beginning in 1979 between BLM and AGFD, 56 desert bighorns were captured in the Black Mountains of Lake Mead National Recreation Area and released in the Virgin Mountains of the Arizona Strip. Sixty-two animals were released between 1983 and 1986 in historic range of the Grand Wash Cliffs. Also beginning in 1984, transplants were completed in the Kanab Creek and Paria Canyon/Vermillion Cliffs historic ranges. Primarily due to desirable habitat conditions, the Paria population has exhibited one of the best reproductive success rates for any bighorn transplant in Arizona.

Estimated populations of desert bighorns in the district as of January 1989 are presented in Table III-19.

TABLE III-19 POPULATIONS OF DESERT BIGHORN SHEEP ON THE ARIZONA STRIP AS OF JANUARY 1989		
Habitat Area	# Bighorn Sheep	Objective #
Virgin Mountains	125-150	100
Grand Wash Cliffs	65	100
Paria Canyon/ Vermillion Cliffs	114	175
Kanab Creek	45-60	130
Source: Arizona Strip District files		

Arizona Strip's public lands provide 222,343 acres of habitat in these four herd areas (Map III-18).

The Paria-Kanab Creek, Black Rock, and Parashant HMPs outline management objectives and actions for the bighorn sheep. They identify the crucial bighorn habitat as well as habitat used on an infrequent basis.

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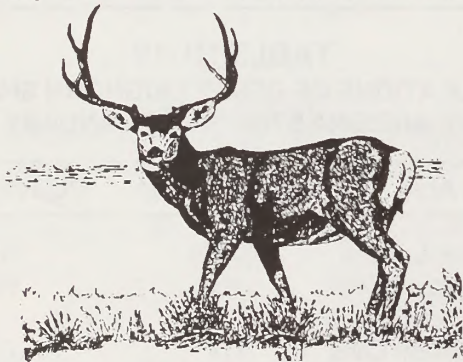
Completed projects benefitting bighorn sheep include the construction of 13 water catchments and developments. The overall objectives of the above plans are to establish viable populations of desert bighorn sheep. Sheep habitat management is also directed by the Range-wide Plan For Managing Habitat of Desert Bighorn Sheep.

Mule Deer (*Odocoileus hemionus*)

Mule deer were not common on the Arizona Strip prior to the arrival of early settlers. After that, deer herds began to increase. There are currently an estimated 2,000 head of deer on the district, down from about 4,600 head in the late 1970s.

The deer's year-around habitat amounts to about 1.3 million federal acres on the district. The higher deer density areas are the Buckskin Mountains, Black Rock, Parashant, and the Kanab Creek drainage.

It is believed that the habitat for deer, both summer and winter, has been declining in quality in the last 20 years. This could be attributed to the removal of domestic sheep, improved livestock management of cattle, and an aggressive fire suppression effort over the past few decades. The succulent forage on summer ranges and young nutritious browse on the winter ranges are giving way to more perennial grasses, trees, and older browse. This habitat change may have contributed to the deer herd decline. Numerous waters have been developed specifically to make more habitat accessible to deer.



In December of 1988 a transplant of 107 deer from Utah took place in the Mt. Trumbull area. This operation was primarily to relocate excess deer rather than a serious attempt to restock deer numbers in Arizona, although recent sightings of deer in the area indicate an increase of resident animals.

Future management objectives should include improving mule deer habitat (Map III-19) by increasing succulent forage on summer ranges and nutritious browse on the winter ranges through vegetation conversion and management prescriptions.

Merriam's Turkey (*Melagris gallopavo merriami*)

This turkey occurs on the approximately 15,200 federal acres of ponderosa pine habitat on the Arizona Strip District (Map III-20). It is estimated there are about 350 turkeys within the ponderosa vegetation type. About 80 percent of the turkeys occur in the Mt. Trumbull/Mt. Logan area and the remainder are found on the Parashant and Black Rock Mountain.

The objectives for this species habitat as listed in the Mt. Trumbull, Black Rock and Parashant HMPs are to maintain good ground cover for nesting and large trees for roosting. Development of waters was completed to ensure reliable water in the turkey's habitat. Several waters have been constructed.

Kaibab Squirrel (*Sciurus kaibabensis*)

The Kaibab squirrel, a tassel-eared and bushy white-tailed species, is unique to the Kaibab Plateau (Map III-21). This squirrel was transplanted to the Mt. Trumbull ponderosa pine forest in the 1970s. They have expanded to all suitable habitat throughout the 10,700 acres of ponderosa pine in the Mt. Trumbull area. The exact number of squirrels is unknown, but 1,000 individuals are estimated. The population now sustains hunting pressure. Both populations and habitat are in good condition. There are few known conflicts with other resource uses.

RECREATION RESOURCES

The district provides a wide array of dispersed recreation opportunities, ranging from vehicle sightseeing to wilderness backpacking. The primary attraction is the opportunity to engage in these activities in remote, unregulated settings. Demand for recreation opportunities available on the Arizona Strip is expected to increase as the human population grows and more land is developed.

The Recreation Opportunity Spectrum (ROS) is a means of identifying recreation experience opportunities available on public lands ranging from primitive to urban. Table III-20 describes the recreation experience opportunities available on the Arizona Strip. Table III-21 lists the approximate acreages of each ROS class on the district. Map III-22 depicts their geographic distribution of ROS classes on the district.

TABLE III-20
RECREATION EXPERIENCE OPPORTUNITIES BY ROS CLASS

ROS Class	Experience Opportunity
PRIMITIVE	Opportunity for isolation from the sights and sounds of man, to feel a part of the natural environment, to have a high degree of challenge and risk, and to use outdoor skills.
SEMI-PRIMITIVE NONMOTORIZED	Some opportunity for isolation from the sights and sounds of man, but not as important as for primitive opportunities. Opportunity to have high degree of interaction with the natural environment, to have moderate challenge and risk, and to use outdoor skills.
SEMI-PRIMITIVE MOTORIZED	Same as semi-primitive nonmotorized, however, explicit opportunity to use motorized equipment while in the area.
ROADED NATURAL	About equal opportunities for affiliation with other user groups and for isolation from sights and sounds of man. Opportunity to have a high degree of interaction with the natural environment. Challenge and risk opportunities are not very important except in specific challenging activities. Practice of outdoor skills may be important. Opportunities for both motorized and nonmotorized recreation are present.
RURAL	Opportunities to experience affiliation with individuals and groups are prevalent as is the convenience of sites and opportunities. These factors are generally more important than the natural setting. Opportunities for wildland challenges, risk taking, and testing of outdoor skills are unimportant, except in those activities involving challenge and risk.
URBAN	Opportunities to experience affiliation with individuals and groups are prevalent as is the convenience of sites and opportunities. Experiencing the natural environment, and the use of outdoor skills is largely unimportant.

Source: Arizona Strip District files

TABLE III-21
ROS CLASS ACREAGE ON THE ARIZONA STRIP DISTRICT

ROS Class	Total Acres*	Percent of Total
Primitive	270,000	9.0
Semi-Primitive Nonmotorized	659,000	21.0
Semi-Primitive Motorized	1,586,000	50.0
Roaded Natural	526,000	17.0
Rural	78,000	2.9
Urban	4,000	0.1
TOTAL	3,123,000	100.0

Source: Arizona Strip District files

*Includes federal and non-federal land

The ROS system recognizes that experience opportunities are dependent on several variables, some which can be controlled and some which cannot. Three variables which can be controlled are the focus of recreation management in the RMP. These are the physical, social, and managerial settings. Appendix 20 describes these settings as they occur along the spectrum from primitive to urban.

Ponderosa pine forests, basalt-capped mesas, colorful sandstone cliffs, canyons, and Mohave desert bajadas and basins are some of the physical settings available to visitors. Interstate 15 and Highway 89A are major tourist routes in the northern part of the district and provide the only paved access to the area. A network of unpaved roads and 4-wheel drive trails provides access to the central and southern parts of the district. Popular areas for recreation activities include Paria Canyon, Mt. Trumbull, and Black Rock Mountain. Because of its common borders, the district also provides access to some of the more remote areas of the Grand Canyon National Park (GCNP) and Lake Mead (LMNRA) and Glen Canyon National Recreation Areas (GCNRA).

Dispersed recreation, defined as recreation that requires a variety of sites yet needs no special facilities, is the main type of recreation available to visitors on the Arizona Strip. Table III-22 lists specific types of dispersed recreation and their estimated level of visitor use excluding wilderness areas for 1987. These figures are best estimates as no registration system exists for the majority of the district.

The Virgin River Campground and adjacent interpretive site located along I-15 in the Virgin River Gorge and the Dominguez & Escalante interpretive site on Highway 89A near the base of the Vermillion Cliffs are the only developed BLM facilities on the district.

AREAS OF RECREATIONAL AND SCENIC IMPORTANCE

The Uinkaret Mountains

This area covers 108,000 acres surrounding the Mt. Trumbull and Mt. Logan wilderness areas. The area includes the Uinkaret volcanic field, an area of about 144 square miles of gently rounded cinder cones, basalt capped mesas, ice caves and rugged lava flows with pinyon-juniper and ponderosa pine vegetation. This area receives moderate recreational use and is used frequently for camping by those traveling to Toroweap in the Grand Canyon National Park (GCNP). It provides good opportunities for geological, botanical and historical sightseeing, semi-primitive camping, wildlife viewing, big and small game hunting, pinyon pine nut collection, and firewood and Christmas tree cutting.

The Parashant

"Parashant" refers to an area on the south end of the Shivwits Plateau that forms the upper watershed for the Parashant Canyon, an ephemeral tributary of the Grand Canyon. Its uniqueness lies in the extensive stringers of ponderosa pine that grow along the drainages at elevations between 5900 and 6200 feet. This is well below the recognized minimum elevation of 6500 feet for ponderosa habitat.

The area borders on and provides access to Mount Dellenbaugh and several remote canyons on the Lake Mead National Recreation Area (LMNRA) and the GCNP. Its mixture of ponderosa and pinyon/juniper woodland provides habitat for mule deer, small game, raptors and other game and non-game species.

TABLE III-22
VISITOR USE IN EXTENSIVE RECREATION MANAGEMENT AREAS (1987)
ON THE ARIZONA STRIP DISTRICT

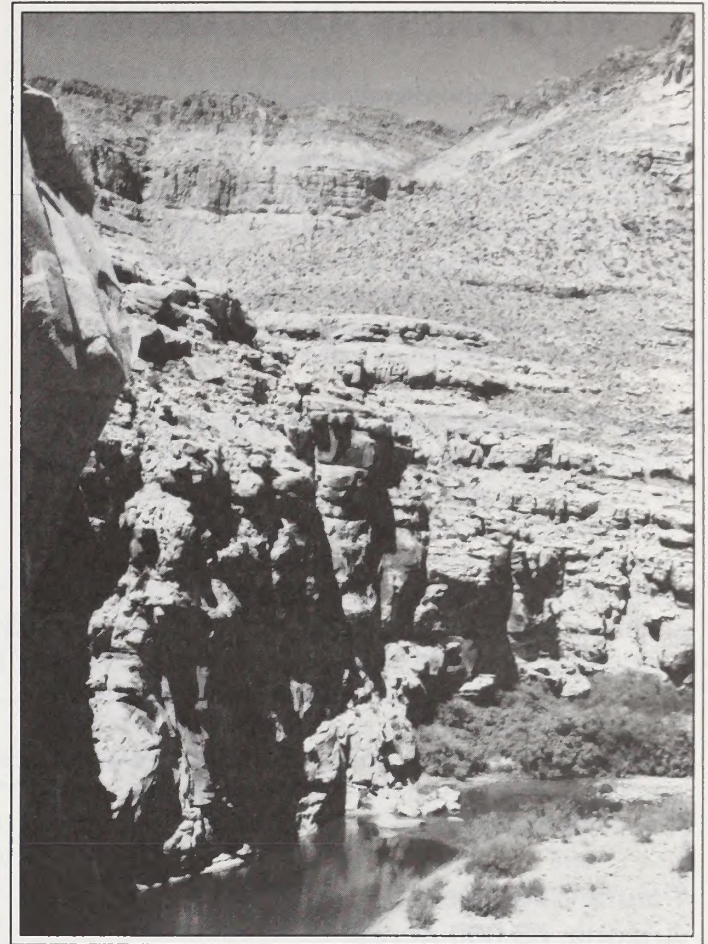
Activity	Visits	Visitor Hours
Recreational OHV	3,700	16,600
Driving for pleasure	3,300	22,000
Horseback riding, hiking, backpacking, walking for pleasure	3,700	29,600
Backcountry/trailhead camping	6,800	162,000
Hunting, trapping	2,700	97,200
Rock collecting, nature study, photography	19,700	23,200
(includes Virgin River CG, Dominguez & Escalante Interpretive Site)		
Special Recreation Permits (includes Rhino Rally motorcycle race)	1,400	10,700
Winter sports	30	300
TOTALS	41,330	361,600

Source: Arizona Strip District files

The remote location of the Parashant area offers opportunities for unregulated recreation activities including backcountry exploring by vehicle, hiking, backpacking, camping, picnicking, big and small game hunting, and wildlife observation. The area is contiguous to the western portion of the Grand Canyon and offers excellent scenic vistas of the canyon.

One other area of scenic importance is the Virgin River Scenic Withdrawal in the Virgin River Gorge. The majority of area included in the withdrawal is now included in either the Paiute or Beaver Dam Mountains Wilderness. In a withdrawal review, BLM has recommended that the portions of the scenic withdrawal inside wilderness be revoked and the remainder be retained to provide full protection of the scenic resource. The retained portion would include the strip of land between the wilderness boundaries within the Virgin River Gorge.

Eight other areas are recognized as having outstanding scenic and cultural values and excellent opportunities for a variety of recreational activities in remote settings. These areas and their special values are shown in Table III-23.



The Virgin River Gorge.

TABLE III-23
ADDITIONAL AREAS ON THE ARIZONA STRIP DISTRICT
WITH OUTSTANDING RECREATION OPPORTUNITIES

Area	Special Values
Paria Plateau	Remoteness, geologic scenery, extensive archaeological features
House Rock Valley	Geologic scenery, big game hunting, great western trail, birds of prey
Kanab Creek Tributaries	Geologic scenery, rock hounding, big game hunting, archaeological features, historical features, birds of prey, remote
Lower Grand Wash Cliffs	Historic mining features, remote and wild, pristine
Hidden Canyon	Geologic features, vegetative variety, remote, 4x4 access, dramatic vertical relief
Parashant, Andrus, and Whitmore Canyons	Geologic scenery, big game hunting, archaeological features, birds of prey, remote

Source: Arizona Strip District files

WILDERNESS MANAGEMENT

There are eight wilderness areas which, by definition, are considered Special Recreation Management Areas (SRMAs). The Arizona Wilderness Act of 1984 designated these eight areas that range from 6,700 to 89,400 acres within Arizona. Portions of two are managed jointly with Utah BLM and one with the U.S. Forest Service. These eight wilderness areas provide a variety of opportunities for those seeking greater isolation and primitive and unconfined recreation activities.

Beaver Dam Mountains Wilderness, Arizona, 15,100 Acres

This wilderness consists of rugged mountains, gently sloping alluvial slopes and the north side of the Virgin River Gorge. Vegetation includes Joshua trees, desert shrubs, and several rare plant species. Notable wildlife species include desert bighorn sheep, desert tortoise, birds of prey, and the endangered woundfin minnow. Uniquely, this wilderness is separated from the Paiute Wilderness by Interstate 15 (a potential scenic byway), enabling thousands of travelers to view the wilderness as they drive through the Virgin River Gorge.

Paiute Wilderness, Arizona, 88,000 Acres

The Virgin Mountains form the backbone of the Paiute Wilderness Area, which ranges from ponderosa pine to Mohave desert. It includes the south side of the Virgin River Gorge which is readily seen from I-15 (a potential scenic byway). The large elevation changes provide diverse vegetative communities and wildlife habitat for over 250 species including mule deer, mountain lion, desert tortoise, and desert bighorn sheep. Excellent scenic vistas are available from the top of the Virgin Mountain ridgeline.

Grand Wash Cliffs Wilderness, Arizona, 37,000 Acres

This twelve-mile stretch of the Grand Wash Cliffs is wild and very remote. Many rugged canyons, scenic escarpments, miles of cliffs, and sandstone buttes mark the transition zone between the Colorado plateau and Basin and Range provinces. The cliffs are important habitat for desert bighorn sheep and raptors, while the low desert area contains desert tortoise and the gila monster.

Paria Canyon-Vermillion Cliffs Wilderness, Arizona, 89,400 Acres

Nationally known for its beauty and solitude, Paria Canyon has towering walls streaked with desert varnish, huge red rock amphitheaters, sandstone arches, wooded terraces, and hanging gardens. Along the canyon bottom, the Paria River and numerous springs combine to form a ribbon-like oasis of willows and cottonwoods.

Joining the Paria Canyon at its mouth are the Vermillion Cliffs. This 3,000-foot escarpment dominates the area with its thick Navajo sandstone face, steep, boulder-strewn slopes, rugged arroyos and stark overall appearance. This attraction is visible along a potential scenic byway (highway 89A).

Petrified logs, dinosaur tracks, and two historic trails provide information on the history of the area along with numerous remote and pristine areas atop the Vermillion Cliffs. Several significant archaeological sites on the Paria Plateau are included in the wilderness. Desert bighorn sheep inhabit the wilderness area.

Cottonwood Point Wilderness, Arizona, 6,900 Acres

This wilderness is part of an impressive Navajo sandstone plateau overlooking the lone Arizona Strip country. The 1,000-foot multicolored cliffs, wooded canyons, craggy pinnacles and alcoves dominate the landscape and is visible from a potential scenic byway (state highway 389). This area adjoins the southern end of the Canaan Mountain Wilderness Study Area in Utah which has been recommended for wilderness designation by the Utah BLM.

Mt. Trumbull Wilderness, Arizona, 7,900 Acres

This wilderness contains the slopes and summit of Mt. Trumbull, involving an elevation change of nearly 3,000 feet. The unit has basalt ledges, pinyon-juniper woodlands, ponderosa pine forests, and groves of Gambel oak and aspen. These vegetative communities are home for mule deer, wild turkey, and the unique Kaibab squirrel.

Mt. Logan Wilderness, Arizona, 14,600 Acres

This area of recent volcanic origin contains Mt. Logan and portions of the Uinkaret Mountains. It includes basalt ledges, ponderosa pine forests, pinyon-juniper woodlands and a large, colorful, naturally eroded amphitheater known as Hells Hole. Like Mt. Trumbull, it provides habitat for deer, turkey, and Kaibab squirrels. The ponderosa stand here contains some of the largest of this species found anywhere in Arizona.

Kanab Creek Wilderness, Arizona, 6,700 Acres

Managed jointly by the BLM and U.S. Forest Service, Kanab Creek is part of the largest canyon system on the north side of the Grand Canyon. It is rich in impressive rock formations, colorations, and water and wind carved features. Numerous springs provide an interesting contrast with the generally arid terrain. The cliffs are home to bands of desert bighorn sheep as well as the endangered peregrine falcon.

Table III-24 lists four types of dispersed recreation and their estimated level of visitor use for 1987 in the wilderness areas. These figures are best estimates as no accurate registration system exists (except for Paria Canyon) for these areas.

TABLE III-24
VISITOR USE IN WILDERNESS AREAS ON THE ARIZONA STRIP DISTRICT (1987)

Wilderness	Nonmotorized		Camping		Hunting		Boating	
	Visits	Visitor Hrs.	Visits	Visitor Hrs.	Visits	Visitor Hrs.	Visits	Visitor Hrs.
Paiute	60	500	0	0	200	1,200	30	150
Beaver Dam Mtns	25	200	0	0	30	180	30	100
Grand Wash Cliffs	17	140	0	0	22	180	0	0
Cottonwood Point	40	200	10	500	10	700	0	0
Mt. Logan	40	200	10	500	10	700	0	0
Mt. Trumbull	60	300	5	200	10	500	0	0
Kanab Creek	50	3,600	60	3,600	10	500	0	0
Paria Canyon- Vermillion Cliffs	2,700	149,100	1,700	137,700	20	300	0	0
TOTALS	2,992	154,240	1,785	142,500	312	4,260	60	250

Source: Arizona Strip District files

VISUAL RESOURCES

Approximately 75 percent of the Arizona Strip District, from the Grand Wash Cliffs east to Marble Canyon, lies in the Colorado Plateau physiographic province. It is characterized by consolidated sedimentary rock carved by steep-walled drainages. Wooded plateaus, deep, vertical-walled canyons, broad valleys and mountain peaks of volcanic origin are found in abundance. Nearly all of the rather scenic canyons are the result of cutting by the numerous tributaries of the Colorado River such as Kanab Creek, Paria Canyon, and the Virgin River Gorge.

The remaining 25 percent of the district, from the Grand Wash Cliffs west to the Nevada border, is in the Basin and Range province. The Basin and Range on the

district is characterized by alluvial valleys bounded by north-south trending mountain ranges.

Visual resource inventory classes are based on three determinations: scenic quality, visual sensitivity, and distance zones.

Scenic values on the district are varied and numerous, important not only for their intrinsic value but also for the foreground and background provided for the outstanding scenery in the surrounding region. Scenic quality is described as the visual appeal of an area. The rating is based on seven key factors: landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications. Scenery is classified as A, B, or C, A being the highest scenic quality (Table III-25 and Appendix 23).

TABLE III-25
SCENIC QUALITY ACREAGES ON THE ARIZONA STRIP DISTRICT

Quality Class	Area (Acres)	Percent
A (High)	448,000	14
B (Medium)	1,050,000	34
C (Low)	1,625,000	52
TOTAL	3,123,000*	100

Source: Arizona Strip District files

*This includes federal and non-federal lands

Lands are placed into one of four visual resource inventory classes that represent the relative value of the visual resources. Classes I and II represent the highest value; class III, moderate value; and class IV is of least value. The inventory classes provide the basis for considering visual values in the RMP process. Visual resource management (VRM) classes are established through the RMP process and may differ from the inventory classes because of resource allocation decisions made in the RMP. For example, an area that was determined to be in class II during the inventory process could be designated as a scenic ACEC and classified as VRM class I based on the importance of the visual values.

The existing VRM classes were determined during the Management Framework Plan (MFP) process in 1976. These classes are listed in Table III-26 and are depicted in Map II-27.

VRM classes are given objectives based primarily on the amount of change in the visual resource that is acceptable.

TABLE III-26
VISUAL RESOURCE MANAGEMENT CLASSES (VRM CLASS) ON THE ARIZONA STRIP

	Area (Acres)	Percent
I	276,000	9
II	763,000	24
III	528,000	17
IV	1,556,000	50
TOTALS	3,123,000*	100

Source: Arizona Strip District files

*This includes federal and non-federal lands

TRANSPORTATION/ ACCESS

Paved access to the public lands on the Arizona Strip is limited. Major highways include a thirty-mile segment of interstate 15 in the northwest corner of the district and US 89A between the Utah state line north of Fredonia and the Navajo Bridge at Marble Canyon. One other major highway known as US 389 runs between the Utah state line at Colorado City and Fredonia. These latter two highways provide a single east-west route across about two-thirds of the district. There are two additional small segments of paved roads, Highway 91 near Littlefield, Arizona, and the other south of Fredonia, Arizona. All other access from outside the district is either improved or unimproved natural surfaced roads. These are maintained by BLM or other federal agencies, counties, or private groups or individuals. Table III-27 lists road classes and length (Map III-23).

TABLE III-27
TRANSPORTATION/ACCESS ROUTES ON THE ARIZONA STRIP DISTRICT TYPE OF ACCESS

Route	Length
PAVED ROADS	140 MILES
PRIMARY UNPAVED	650 MILES
SECONDARY UNPAVED	1,822 MILES
FOUR-WHEEL DRIVE	2,790 MILES
TOTAL	5,402 MILES

Source: Arizona Strip District files.

Easements and/or fee title ownership of the land has been gained by the Arizona Department of Transportation for all public highways. The U.S. Forest Service has acquired an easement for the paved road south from Fredonia to the forest boundary. Mohave County is in the process of obtaining easements for the roads across public lands. BLM has acquired easements for Quail Hill Road, one easement from the State of Arizona, and three from private individuals. Other easements and retained rights-of-way owned by BLM are limited in number and location. These have primarily been obtained in response to specific needs.

SOCIAL AND ECONOMIC CONDITIONS

POPULATION

This section addresses three components of the social framework of the Arizona Strip District: population, income, and pertinent social perceptions. For the purposes of this RMP the primary social community is defined by a hypothetical line extending from St. George, Utah east to Page, Arizona, southwest to Flagstaff, west to Kingman, northwest to Lake Mead, and east again to St. George.

In 1986 about 100,000 people lived in the Arizona Strip RMP area (Table III-28). Most (40 percent) of these resided in Flagstaff. St. George represented about 20 percent of the total, and Kingman about 12 percent.

TABLE III-28
POPULATION AND PER CAPITA INCOME SELECTED COUNTIES, ARIZONA, UTAH AND NEVADA

Area Name (3)	4/1/80 Census (1)	7/1/86 Est. (2)	% Change 80-86	Per Capita Income 1979	Per Capita Income 1985	% Change 79-85	1988 Estimate
ARIZONA	2,716,598	3,244,000	19.4	7,042	10,561	50.0	3,605,700
COCONINO COUNTY	75,008	86,100	14.8	5,631	8,032	42.6	94,800
FLAGSTAFF	34,743	39,180	12.8	6,155	8,670	40.9	42,580
FREDONIA	1,040	1,430	37.4	4,718	6,826	44.7	1,355
PAGE	4,907	6,840	39.5	8,141	11,847	45.5	7,190
MOHAVE COUNTY	55,865	76,600	37.1	6,673	9,041	35.5	81,400
COLORADO CITY	1,439	2,120	47.6	1,499	2,032	35.6	2,350
KINGMAN	9,257	10,760	16.3	7,046	9,294	31.9	11,560
UTAH	1,461,037	1,655,000	14.0	6,305	8,535	35.4	1,678,000
KANE COUNTY	4,024	4,800	18.7	4,528	6,379	40.9	4,850
BIG WATER	154	170	9.7	3,018	4,435	47.0	
KANAB	2,148	2,770	28.9	5,257	7,205	37.1	
WASHINGTON COUNTY	26,065	38,600	48.2	4,869	6,346	30.3	41,200
HILDALE	1,009	1,530	51.9	1,466	1,746	19.1	1,630
HURRICANE	2,361	3,210	35.8	4,361	5,823	33.5	3,425
ST. GEORGE	13,146	19,800	50.6	5,406	7,072	30.8	21,130
SANTA CLARA	1,091	1,630	49.8	5,256	6,490	23.5	1,740
WASHINGTON	3,092	4,540	46.7	4,141	5,485	32.5	4,850
NEVADA	800,508	964,000	20.5	8,453	11,200	32.5	
CLARK COUNTY	463,087	569,500	23.0	8,259	11,129	34.7	
MESQUITE	914	1,100	19.9	4,580	6,143	34.1	

(1) Includes corrections made to 1980 counts since the census. These corrected counts were used as the base for the estimate.

(2) Estimates have been rounded to the nearest 10 except for county and state equivalents, which have been rounded to the nearest 100 or 1,000. (Source for 1980 to 1986 estimates: Local Population Estimates (1986 Population & 1985 Per Capita Income), "1986 Population and 1985 Per Capita Income Estimates for Counties and Incorporated Places," Current Population Reports, Series P-26, U.S. Bureau of the Census.)

(3) Source for 1988 Estimates: Arizona data from the Arizona Statistical Review, 44th Annual Edition, Valley National Bank of Arizona, Phoenix, 1988; Utah data from "Selected Demographic, Labor Market, and Economic Characteristics for St. George and Washington County, Utah Department of Economic Security, Labor Market Information Services, Salt Lake City, 1988.

The data reflect a strong growth pattern with an average annual population increase of about 4,000. Table III-28 shows major changes in southern Washington County, Utah, with close to a 50 percent population growth in most of the towns. Percentage increases in the Arizona towns also reflect considerable expansion.

The population data include certain important elements. For example, the portion of retirees is higher than average. Information available from the Utah Department of Economic Security indicates that retirees constitute a significant part of the total population in the St. George area. In Washington County more than 16 percent of the people are over age 62; in comparison, only four percent of the state is older than 62. Retirees also are important sectors of the population in the towns and unincorporated communities between St. George and Las Vegas (Littlefield, Mesquite), and in the towns and settlements between Kingman and Hoover Dam (Meadville, Dolan Springs, Chloride).

Six Native American Tribal reservations are in the Arizona Strip RMP area. Three are in Coconino County. The Kaibab-Paiute Reservation, north of the Grand Canyon, had a 1987 population of 275. The Havasupai Reservation, lying within the Grand Canyon, had an estimated 465 residents in 1987. The Coconino County population of the Navajo Reservation had an estimated population of 16,364 in 1982. Mohave County includes the Hualapai Reservation with 1,200 people. The Moapa Reservation in Clark County has a population of approximately 150. The Shivwits Reservation in Washington County, Utah, had an estimated population of 217 in 1989.

INCOME

There is a wide variation in the per capita income of the residents of towns in the Arizona Strip RMP area (Table III-28). For example, the data shows a range from \$1,746 in Hildale, Utah, to \$11,847 in Page, Arizona. The weighted average per capita income for the towns in the Arizona Strip RMP region is \$9,993.

Nonagricultural employment is the primary income source. Table III-29 summarizes relevant data by county. The three sectors of government (federal, state, local), trade (wholesale, retail), and services employ the majority (about 75 percent) of residents.

Table III-30 shows non-farm employment by selected Arizona communities. Communities, with the exception of Fredonia, have similar percentage of employment by sector. Fredonia's highest employment is in manufacturing.

Wage and salary data show the mining sector has the highest weekly average earnings (Table III-31). Services and trades have the lowest weekly earnings.

SOCIAL PERCEPTIONS

This section identifies and discusses those types of perceptions that relate to issues and concerns of the RMP. For example, economic data indicate that tourism is a major factor in the economy of the area. A partial indication of its importance is employment in the services sector, including lodging and the food service industries.

TABLE III-29
NONFARM EMPLOYMENT BY SECTOR: 1987

	Arizona		Utah	
	Coconino Co.	Mohave Co.	Washington Co.	Kane Co.
Manufacturing	2,850 (8%)	2,950 (14%)	968 (9%)	62 (4%)
Mining	150 (1%)	325 (2%)	60 (1%)	9 (1%)
Construction	1,650 (4%)	1,550 (8%)	688 (6%)	12 (1%)
Tnsp/Pub Util	2,600 (7%)	1,200 (6%)	560 (5%)	27 (2%)
Trade	8,775 (23%)	6,100 (27%)	3,184 (29%)	428 (31%)
Fin/Ins/RE	825 (2%)	1,000 (5%)	500 (5%)	37 (3%)
Services	9,650 (26%)	4,650 (22%)	2,722 (25%)	454 (32%)
Government	10,950 (29%)	3,525 (16%)	2,214 (20%)	368 (26%)
TOTALS	37,450 (100%)	21,400 (100%)	10,896 (100%)	1,397 (100%)

Sources: Arizona: Arizona Statistical Review, 44th Edition, Valley National Bank, Phoenix, September 1988.
Utah: Utah's Southwestern District, A Labor Market Information Report, Utah Department of Economic Security, Salt Lake, August, 1988.

This sector provides 25 percent of the total jobs in the four-county region.

Due to the economic importance of tourism, many residents support uses of the public lands that would draw tourists. These would involve outdoor recreation, easier access to recreational opportunities, and maintenance of suitable habitat for support and growth of wildlife. In contrast, activities that could harm or diminish tourism would not be popular.

Protective management of public lands in order to preserve special features also benefits tourism. These special features include areas with an atmosphere of remoteness and/or solitude, scenic attractiveness, and exceptional properties.

In general, the residents do not perceive the area as one in which people earn high income or wages. They believe that economic development efforts are needed to stabilize the employment base of the region and to improve income. Widespread support would exist for the increase of jobs in manufacturing, construction, and mining. Consequently, because mining activities on public lands provide high wage jobs, much of the Arizona Strip RMP population would favor those efforts (Tables III-29 and III-31).

On the other hand, there are groups and individuals who are strongly opposed to mining operations on the public lands and, in particular, to uranium mining activities. However, the local effects of mining employment and wages is not a concern for these people. Their concerns are focused on the possible detrimental effects uranium mining could have on the environment.

TABLE III-30
NONFARM EMPLOYMENT BY ARIZONA COMMUNITY: 1985

	Fredonia	Flagstaff	Kingman	Williams
Mining	49 (10%)	6 (0%)	80 (2%)	59 (5%)
Construction	25 (5%)	1,000 (5%)	387 (7%)	88 (8%)
Manufacturing	180 (37%)	1,652 (8%)	711 (13%)	79 (7%)
Tnsp/Pub Util	28 (6%)	1,183 (6%)	286 (5%)	117 (10%)
Trade	68 (14%)	5,896 (29%)	1,475 (28%)	322 (27%)
Fire	0	673 (3%)	239 (5%)	14 (1%)
Services	50 (10%)	4,794 (24%)	743 (14%)	174 (15%)
Government	87 (18%)	4,631 (23%)	1,400 (26%)	260 (22%)
TOTALS	487 (100%)	19,835 (98%)	5,321 (100%)	1,113 (95%)

Source: U.S. Census Local Population Estimates: Series P-26, Number 82-53-SC, May 1985.

TABLE III-31
NONFARM AVERAGE WEEKLY EARNINGS: 1987

	Arizona		Utah	
	Coconino Co.	Mohave Co.	Washington Co.	Kane Co.
Manufacturing	403.10	362.35	330.23	250.84
Mining	537.42	466.29	520.85	
Construction	335.63	309.48	318.00	
Tnsp/Pub Util	470.61	416.78	361.61	290.08
Trade	199.46	191.29	196.62	
Fin/Ins/RE	426.74	362.02	295.15	312.69
Services	275.89	280.48	228.46	207.00
Government	410.97	397.02	316.38	291.46

Sources: Arizona: Arizona Department of Commerce, 1988. Utah: Utah's Southwestern District, A Labor Market Information Report, Utah Department of Economic Security, Salt Lake, August, 1988.

CUMULATIVE CHANGES IN THE EXISTING ENVIRONMENT (1976-1989)

Cumulative changes are those changes to the environment which have resulted from the implementation of the existing management framework plans (MFPs) for the Vermillion and Shivwits Resource Areas between 1976 and 1989. Cumulative change establishes a baseline for projecting or estimating the reasonably foreseeable impacts (1990 to 2005) of alternative plans in chapter IV. Much of the change that occurred prior to the MFPs has become unnoticeable to the casual observer due to natural rehabilitation process unless topsoil was removed or a road has been continuously maintained by mechanical equipment.

To facilitate this analysis, all environmental parameters are grouped into four categories; physical, biological, remoteness (recreation settings and experience opportunities), and socio/economic.

PHYSICAL COMPONENT

Table III-32 depicts the estimated cumulative surface disturbance since 1976. The table does not make value judgments on whether the changes are desirable nor account for mitigating measures that were applied to the various actions and practices. Mitigation typically reduces but does not totally eliminate adverse impacts to the surface of the land. In the long-term, natural processes combined with appropriate mitigation can virtually eliminate most surface disturbances.

Management of the watershed, wildlife habitat, livestock grazing, and woodland products programs has resulted in an estimated 61,750 acres of surface change since 1976. Most of the surface change results from vegetation type conversion and reseeding to improve watershed condition, wildlife habitat, rangeland condition, and livestock forage. However, the changes have been of short duration involving initial disturbance from vehicles, chains, plows, etc. used in accomplishing land treatments or harvesting woodland products. Of the 61,750 acres of surface change from these programs, only 535 acres of roads and structural developments are considered permanent changes.



Black Rock Mountain.

TABLE III-32
CUMULATIVE CHANGES TO LAND SURFACE (1976-1989)

Program	Source Of Impact	Acres	%	Remarks
LANDS	Development associated with land use authorizations and ownership adjustments	4,800	7	Generally represents a longterm commitment of resources to development
MINERALS	Exploration and development of locatable, leasable, salable, minerals	1,100	2	Generally represents a temporary commitment of resources; on completion of exploration or mining, surface disturbances are rehabilitated
CULTURAL	Excavations, field schools	5	0	Assumes surface disturbance from excavations as well as fencing and access
WATERSHED	Land treatments and associated roads	21,000	31	Primarily type conversions for improving watershed conditions; short term surface impact
FORESTRY	Commercial harvest	30	0	Assumes temporary impacts; includes access
WOODLANDS	Fuelwood, posts, poles, Christmas trees	21,350	31	Generally represents short-term impacts from harvest of wood-land products and related access
TRANSPORTATION	Black Rock and Quail Hill road upgrades	95	0	Includes new surface disturbance by BLM; Black Rock road completed in 1979; Quail Hill scheduled for completion in 1990
GRAZING	Rangeland developments, land treatments, roads	18,000	27	Primarily vegetation type conversions for improving rangeland conditions; short term surface impact
WILDLIFE	Wildlife developments, land treatments, roads	1,400	2	Assumes short-term impacts for treatments, pipelines, spring developments; long-term for roads, reservoirs, catchments, tanks
RECREATION	SRPs and camping	80	0	Facilities permanent; SRPs and camping generally long-term temporary
TOTALS		67,860	100	

Source: Arizona Strip District files

CHAPTER III - AFFECTED ENVIRONMENT

Management of the lands and minerals programs has resulted in an estimated 5,900 acres of surface change since 1976. Approximately 4,800 acres are considered long-term and permanent changes resulting from lands actions (land developments and agriculture following transfer to private ownership, and rights-of-way and leases). Significant changes from the lands program include the authorization and construction of the Navajo-McCullough 500 KV powerline which crosses about 90 miles of the district from Glen Canyon to Nevada. The land exchange program resulted in: (1) acquisition of all State of Arizona lands in designated wilderness; (2) acquisition of 13,000 acres of private lands in the Parashant area; and (3) exchange of about 2,000 acres near Littlefield, Arizona for about 7,500 acres of critical big-horn sheep habitat in the Black Mountains near Kingman, Arizona.

Significant changes from the minerals program include: (1) development of eight uranium mines of which two are in operation, three are in various stages of development, and three have been closed and reclaimed; (2) active mining of gypsum deposits at two locations and a third being inactive; (3) relinquishment of mining claims by Energy Fuels Nuclear in designated wilderness areas. Locatable mineral development activities have disturbed about 750 acres of the surface since 1976 resulting in temporary change (Appendix 16). Five miles of new road are to be closed and rehabilitated and 38 miles of upgraded roads are to be rehabilitated to near original road conditions upon termination of the specific need. Leasable and salable minerals accounts for another 350 acres of surface disturbance since 1976.

Management of the cultural resource, forestry, and recreation programs has resulted in an estimated 115 acres of surface change in the last 14 years. Of the 115 acres disturbed, 95 acres were short-term surface changes involving archaeological excavations, salvage of timber, dispersed camping, campsites associated with special recreation permits (SRP) and staging areas associated with the Rhino Rally motorcycle race. Ten acres disturbed by these programs are considered long-term, permanent changes involving visitor facilities. This estimate does not include recreational OHV disturbance related to use of ATVs, motorcycles, etc. It is assumed that most off-road activity is related to other uses such as grazing, mineral exploration, administrative field work, camping and hunting and are included in the acreage figures for the various programs listed in Table III-32.

Cultural resources are known to exist throughout the district. Clearances and compliance with the National Historic Preservation Act for all activities which are authorized or carried out by the BLM have helped in finding,

defining, and protecting cultural resources. Many significant sites have been studied by BLM archaeologists or through contracts and volunteer efforts.

BLM transportation system upgrades on Black Rock and Quail Hill roads accounted for 27.5 miles and 96 acres of surface disturbance. Black Rock was completed in 1979 and Quail Hill scheduled for 1990 completion.

BIOLOGICAL COMPONENT

The cumulative change of 14 years of management under the MFPs has resulted in both positive and negative change to animals and plants. Table III-32 summarizes the approximate amount of change that has occurred to the surface of the land during that period. As the surface is disturbed, biological components of the environment are changed also.

Approximately 39,900 acres (59 percent of the total surface disturbance since 1976) of homogeneous and less productive stands of sagebrush or pinyon-juniper with poor understory vegetation conditions were chained, plowed, or burned, and seeded. This was done to reduce erosion and sedimentation, enhance vegetative cover, improve rangeland conditions, wildlife habitat and livestock forage. The end result has been an increase in biological diversity on-site by creating change in a stagnant or undesirable plant community. Short term changes to wildlife species occurred throughout the disturbance phase. Mobile wildlife were temporarily displaced, but quickly returned to the changed and improved habitat. The reseeded areas create more diverse vegetative communities than previously existed and can generally be utilized by a wider variety of species than were present prior to treatment. Vegetative diversity resulting from land treatments was enhanced through use of a variety of seed mixtures that benefit wildlife as well as livestock.

The harvest of woodland products on 21,350 acres (31 % of the total surface disturbance since 1976) has created temporary surface changes, mostly in the form of overland vehicle travel and removal of random overstory trees. This disturbs vegetation and temporarily displaces wildlife. When woodland activities were concentrated in specific areas, the changes are similar to land treatments in that overstory is removed, allowing for a more productive understory. Some negative changes to wildlife species have occurred in areas where small roads are created to facilitate harvesting of woodland products.

The rangeland grazing program on the district is guided by the Shivwits and Vermillion Grazing Management Environmental Impact Statements (EIS) and subsequent monitoring and evaluation activities. Table III-17

shows the various grazing systems that have been implemented through allotment management plans (AMPs) prior to and following the EISs. Appendix 2 shows the trend in rangeland condition. The monitoring data shows that 90 percent of the district is in upward and static trend. Rangeland conditions have improved which contributes to increased biological diversity.

Management of riparian areas has been intensified since completion of grazing EISs and AMP and HMP implementation. Ten of the priority riparian areas have been fenced to exclude livestock grazing, four have had adjustments in grazing use and numbers, three are not allocated to grazing due to topography and location, and the remaining area has a draft AMP in progress.

Management of special status species has increased. BLM has participated in development of recovery plans for the endangered roundfin minnow, peregrine falcon, and brady and siler pincushion cactus. Inventory and monitoring efforts have been increased on these species, the desert tortoise, and flick and bristly plains cactus.

Six wildlife habitat management plans (HMPs) have been developed and are in various stages of implementation. Habitat improvements including land treatments, water developments and modification of fences and waterlots have been implemented to improve conditions and improve diversity of wildlife on the district. In cooperation with the Arizona Game and Fish Department, several species of wildlife have been transplanted to new and former ranges. These include pronghorn antelope (Table III-18), desert bighorn sheep (Table III-19), Kaibab squirrel, Merriam's turkey and most recently, mule deer. The combination of land treatments, riparian management, special status species recovery programs and implementation of AMPs and HMPs has contributed significantly to the biological diversity of both plants and animals on the district.

Locatable, leasable and salable minerals account for temporary changes to plants and animals on 1,100 acres (2 percent of the total surface disturbance since 1976). Wildlife are displaced near exploration and development sites generally for the duration of operations. Some species such as song bird, bighorn sheep or raptor may acclimate to ongoing disturbances with little consequence other than temporary loss of habitat.

Changes which cause a decrease in biological diversity would be related to lands program actions (land developments and agriculture following transfer to private ownership, and rights-of-way and leases) or permanent developments which eliminate vegetation, wildlife or their interactions.

REMOTENESS COMPONENT

Remoteness is defined as "recreation experience opportunities in backcountry, natural-appearing settings." Experience opportunities (or the possibilities for visitors to engage in activities in order to feel satisfaction) are dependent on a physical setting, social setting and managerial setting. Backcountry areas having different combinations of these three settings generally fall into the four, less urban classes described in Table III-20: primitive, semi-primitive nonmotorized, semi-primitive motorized, and roaded natural. Table III-21 lists the current recreation opportunity class acreage based on the miles of roads listed in Table III-27. Map III-8 shows the roads constructed for exploration and mining purposes. The "remoteness" analysis estimates change to the availability the various classes brought about by 14 years of management under MFPs.

Management of the watershed, grazing, wildlife, and woodland products programs has brought about the greatest change to recreation experience opportunities. Obvious change to physical settings brought about by land treatments, facility development, and associated roads has generally shifted recreation classes from the primitive end of the recreation opportunity spectrum toward the urban end. These management activities have made human influence more obvious, thus impacting "remoteness." However, the change over time is less noticeable as vegetative diversity and succession within treated areas occurs.

Mineral exploration and development have slightly changed physical settings with new and upgraded roads and development sites. These activities have generally changed recreation opportunities in semi-primitive non-motorized and motorized classes by shifting settings toward the urban end of the recreation spectrum. However, these activities are considered short-term changes due to mitigation, which includes almost total rehabilitation of access roads, mine yards, and powerlines. The greatest change associated with mineral activities appears to be from new and upgraded roads on social settings. As roads are built or upgraded to improve hauling access, access for the general public is also improved. This has a tendency to encourage the public to go into areas they previously avoided due to poor road conditions. With greater numbers of visitors in an area comes a change to the social setting toward the urban end of the spectrum.

As growth and associated development has occurred in the Littlefield-Beaver Dam area and the Colorado City-Cane Beds area there has been a change to

recreation settings on nearby public lands. Use authorizations and land ownership adjustments have either increased the number of growth-related developments on public lands or transferred ownership to private or state interests. In either case, recreation settings have moved toward the urban end of the spectrum in these areas.

In 1984, the designation of eight wilderness areas (266,000 acres or 9.2 percent of lands administered by BLM on the Arizona Strip) contributed significantly to the preservation of remoteness and semi-primitive and primitive recreation opportunities on the district. Areas such as Paria Canyon, Vermillion Cliffs, Cottonwood Point, Mt. Trumbull and portions of Beaver Dam and Virgin Mountains, Grand Wash Cliffs, Mt. Logan, and Kanab Creek will be preserved in their natural conditions for future generations to enjoy.

SOCIO/ECONOMIC COMPONENT

The socio/economic component is made up of three main attributes, which include population, income, and social perceptions. BLM actions affect each of these attributes in various ways. The following is a summary of how these actions have affected each of these attributes to date through implementation of the existing MFPs.

POPULATION

BLM actions which have encouraged and accommodated population growth on the district include the granting of rights-of-way, issuance of leases, processing land exchange applications and patents, and authorizing the use of mineral materials. Together these uses have affected some 5,100 acres of public land.

Most of the land is located in the vicinity of established communities. Here, approximately 3,150 acres have been affected through R&PP patents and leases, airport leases, landfill and small tract leases, and private exchanges. All of these actions are directly related to the expansion of the population and communities on the district.

The remainder of the land is dispersed throughout the district. This acreage includes various road and utility rights-of-way, communication sites, and mineral material rights-of-way and sites. Together these authorizations have affected some 1,950 acres. These types of authorizations facilitate population changes in the general vicinity of the district, but do not directly change populations.

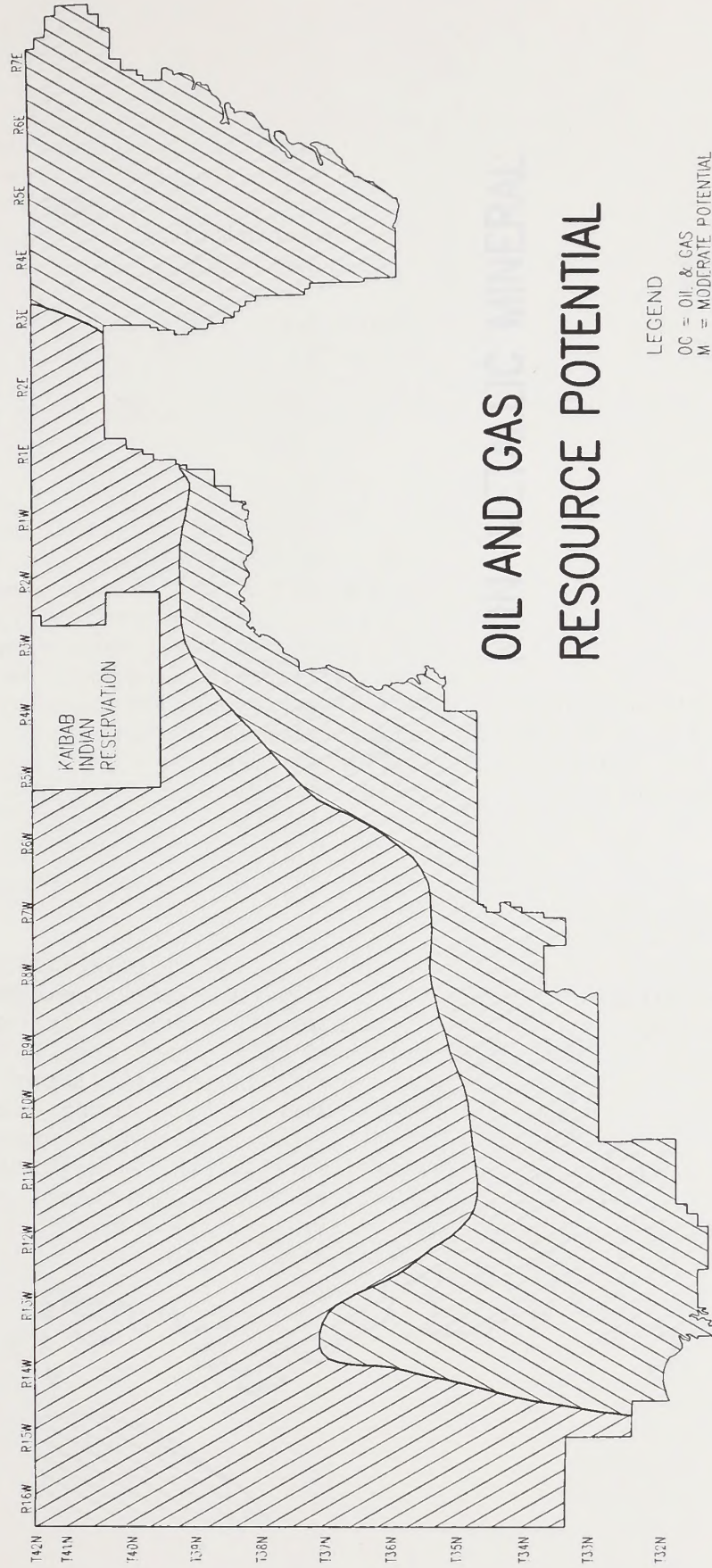
INCOME

Income within the Arizona Strip region is derived primarily from government, trade, and services. Together, these types of employment provide approximately 75 percent of the jobs. The remaining 25 percent is composed of jobs in the manufacturing, construction, mining, transportation/public utilities, and fire suppression fields. Recent BLM land use management actions under MFP direction have not significantly changed the traditional types of jobs available in the area or the associated per capita income.

SOCIAL PERCEPTIONS

Since the MFPs were developed in the mid-1970s, social perceptions concerning the district and resource use and development have intensified. One of the factors leading to the increase in intensity is the development of resources on the district, specifically uranium mineral resources. Various groups and individuals are opposed to resource development on the public lands. The actions which encourage the development of the natural resources are generally looked on with disfavor and actions which would restrict uses on the public lands would be generally favored by this group. With regard to uranium mineral resource development, the opposition appears to be further based on perceptions concerning environmental effects of mining and the philosophical arguments concerning the use of uranium and storage of radioactive waste.

The population which resides within or adjacent to the district, believes that economic development is needed. This development, it is perceived, would tend to stabilize employment and increase income. To this end, there appears to be widespread local support for increased activities related to manufacturing, construction, and mining. These jobs are generally higher paying than those in the service sector. The sought after employment opportunities would also provide more stable employment opportunities, less likely to be affected by seasonal fluctuations such as those service sector jobs related to tourism.

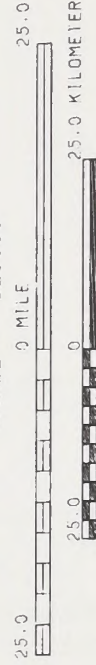


OIL AND GAS RESOURCE POTENTIAL

LEGEND

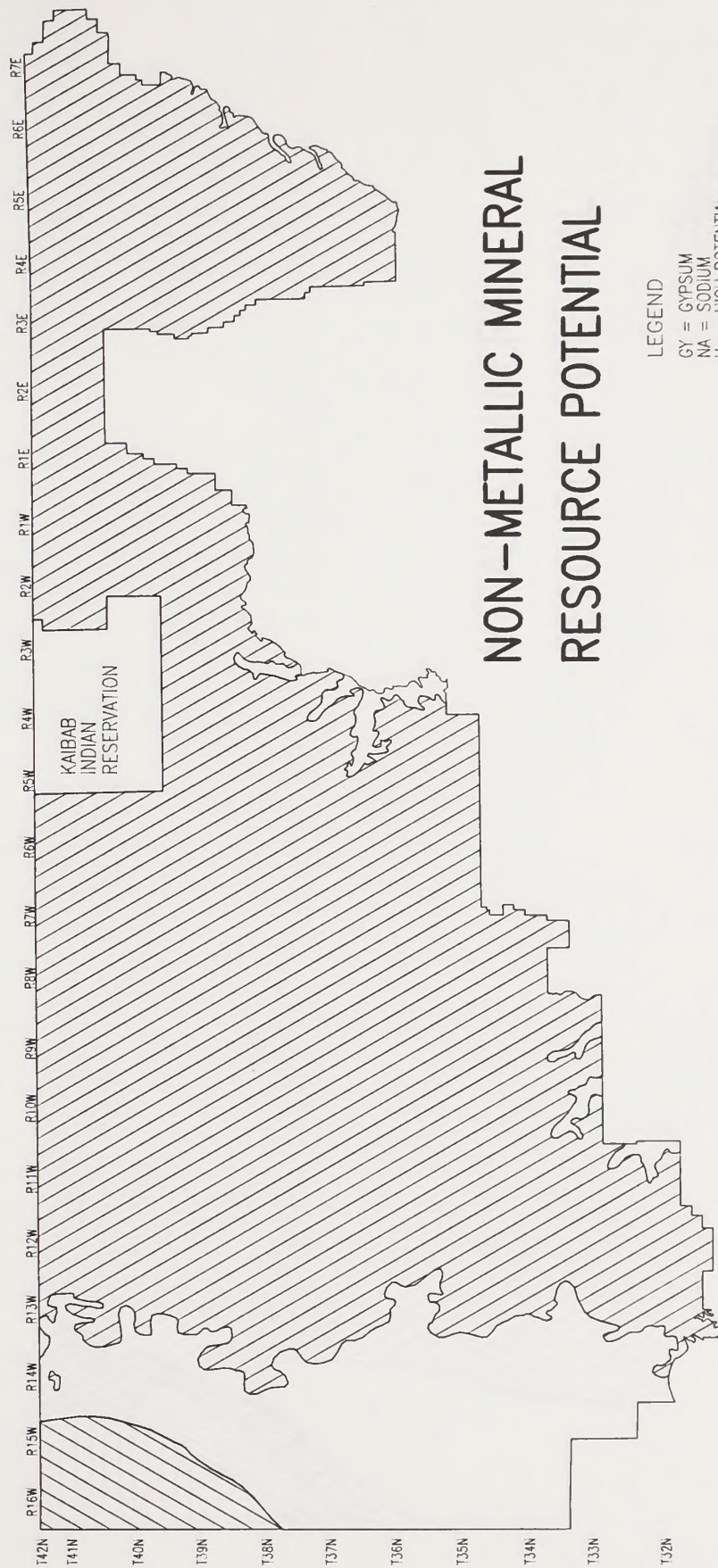
OC = OIL & GAS
M = MODERATE POTENTIAL
L = LOW POTENTIAL
B = INDIRECT EVIDENCE
C = DIRECT EVIDENCE

SCALE 1 : 825000



OC-L-B
OC-M-C



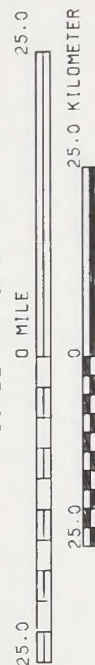


NON-METALLIC MINERAL RESOURCE POTENTIAL

LEGEND

- GY = GYPSUM
- NA = SODIUM
- H = HIGH POTENTIAL
- M = MODERATE POTENTIAL
- C = DIRECT EVIDENCE
- D = ABUNDANT DIRECT EVIDENCE

SCALE 1: 825000



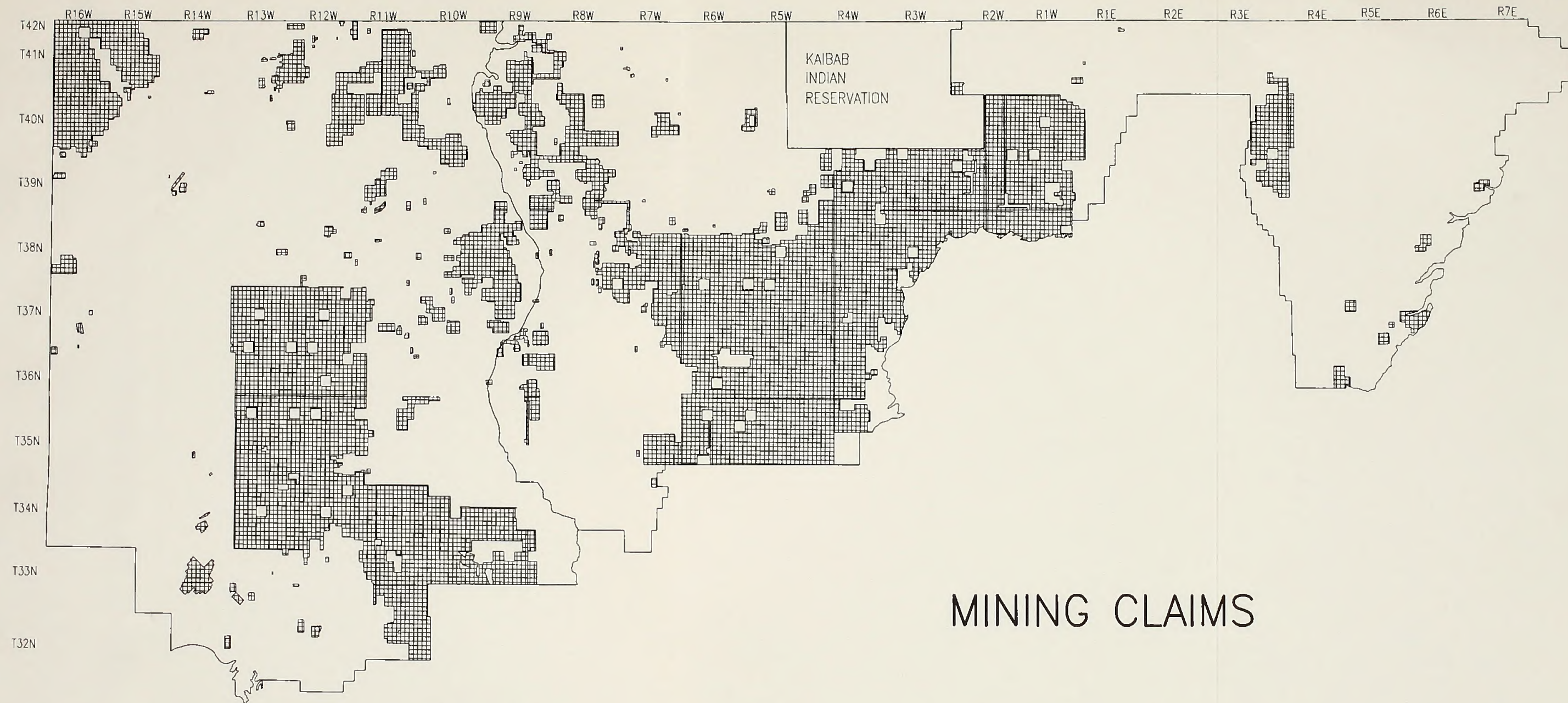
N

NA-M-C
GY-H-D









SCALE 1: 500000

N

25.0

0 MILE

25.0

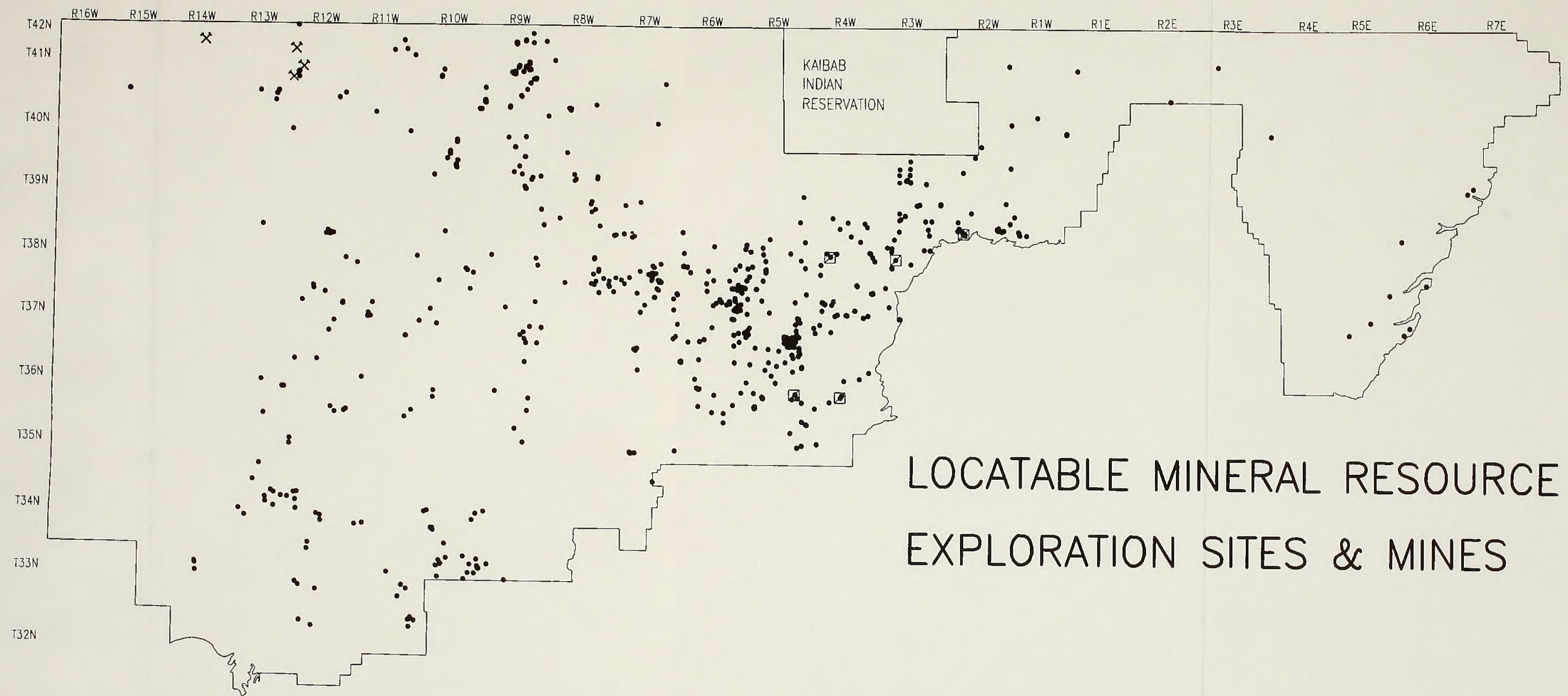
25.0

0

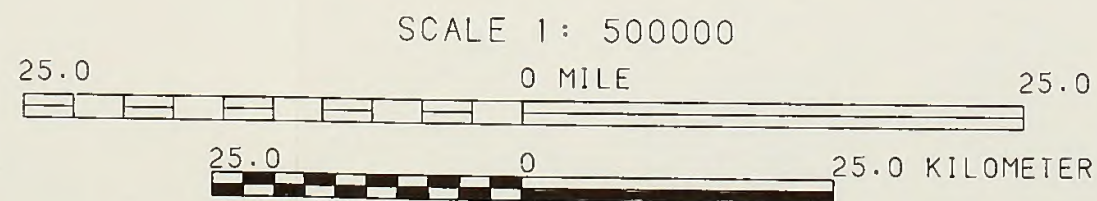
25.0 KILOMETER

CLAIM

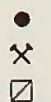


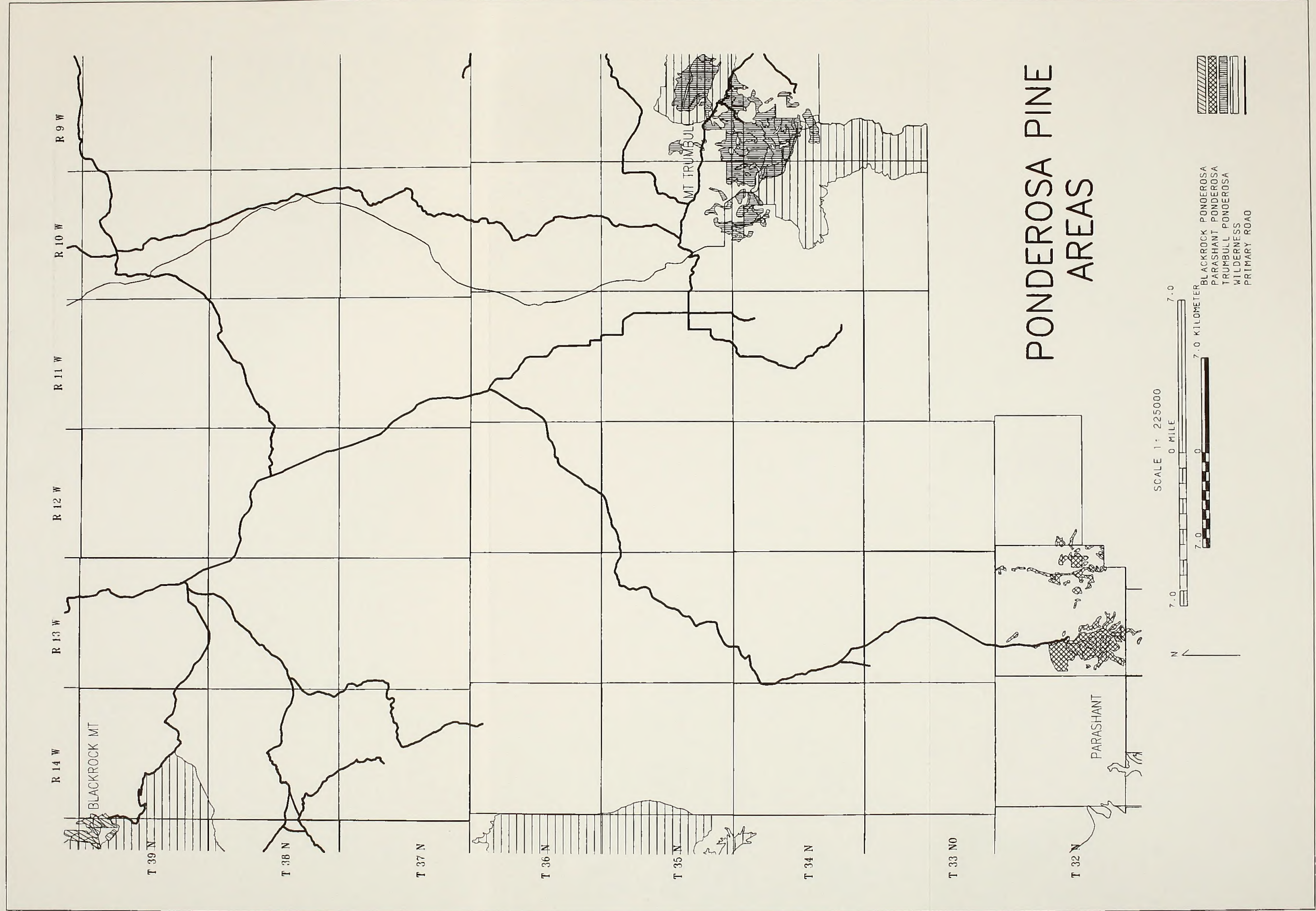


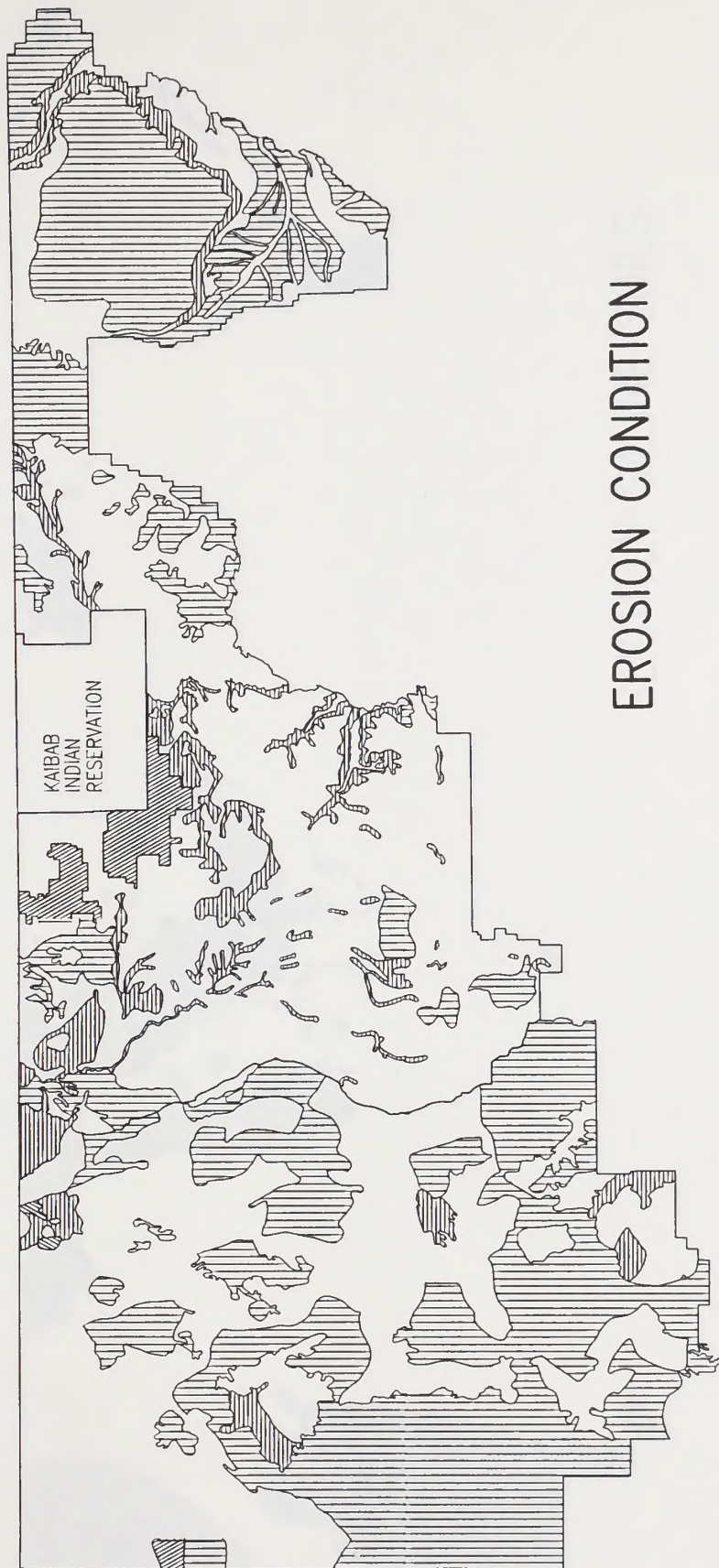
LOCATABLE MINERAL RESOURCE EXPLORATION SITES & MINES



EXPLORATION SITE
SURFACE MINE
SUBSURFACE MINE

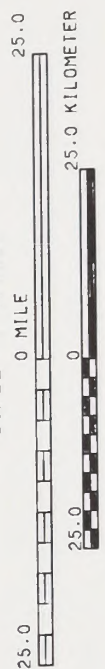






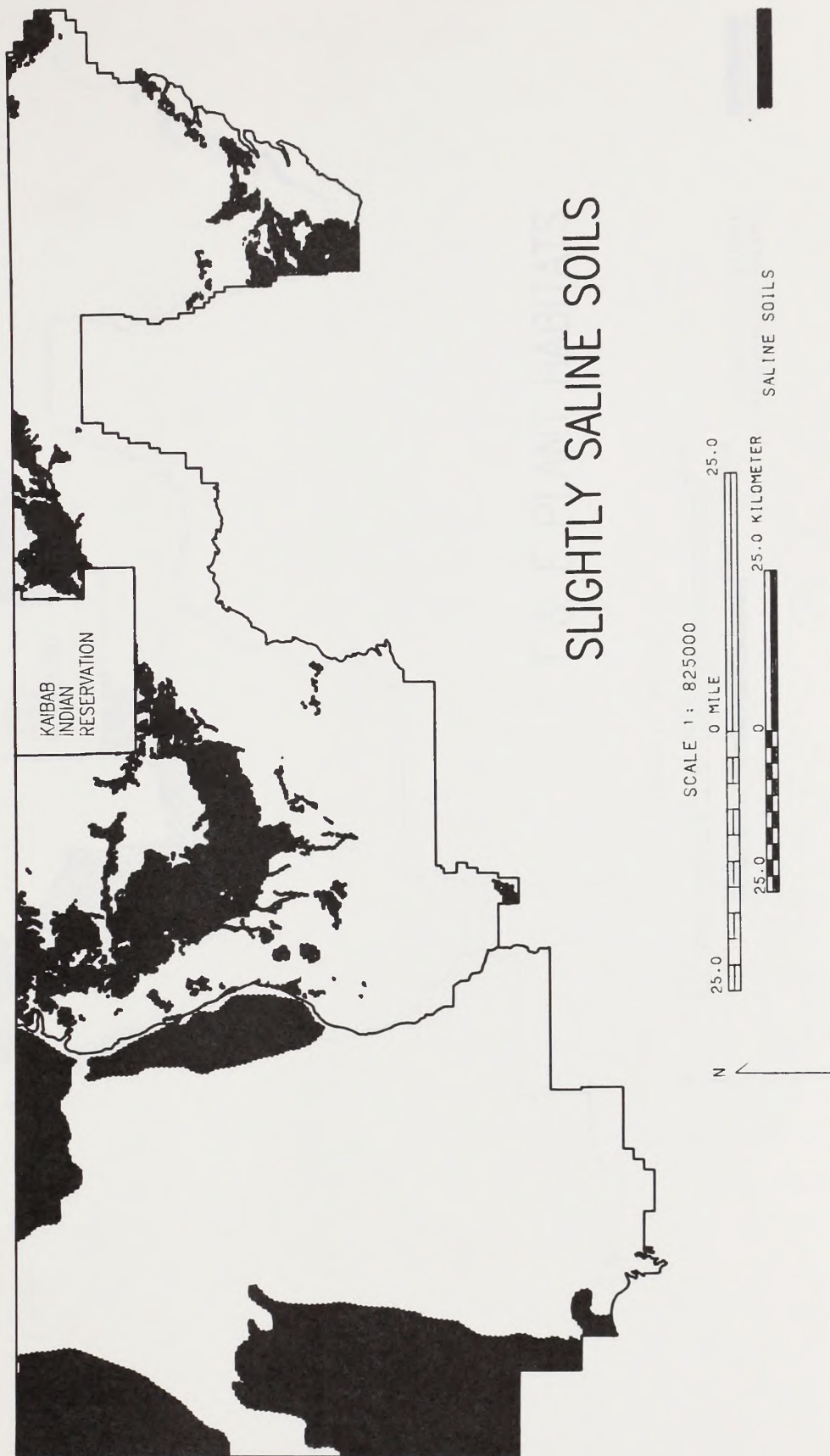
EROSION CONDITION

SCALE 1: 825000

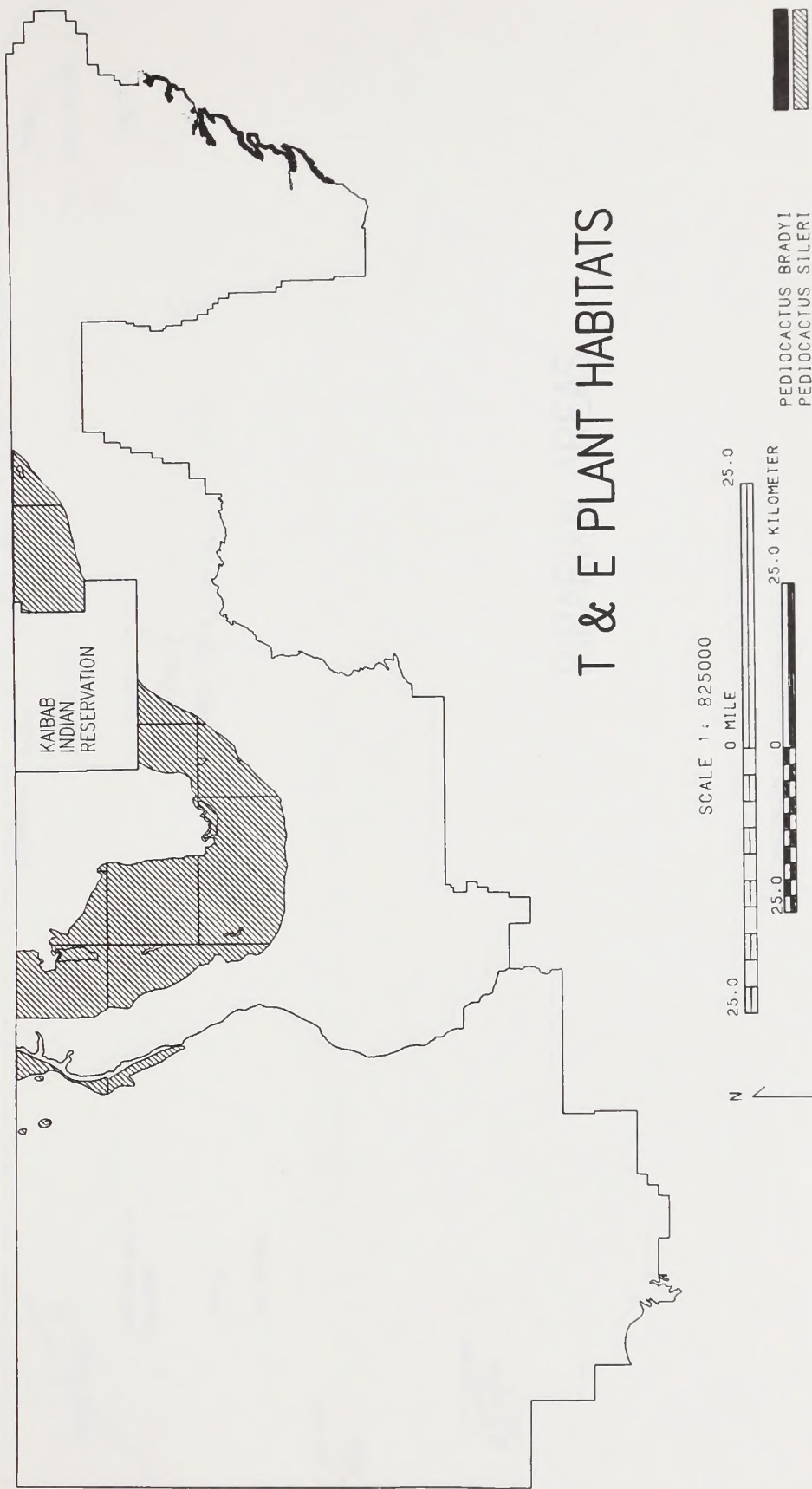


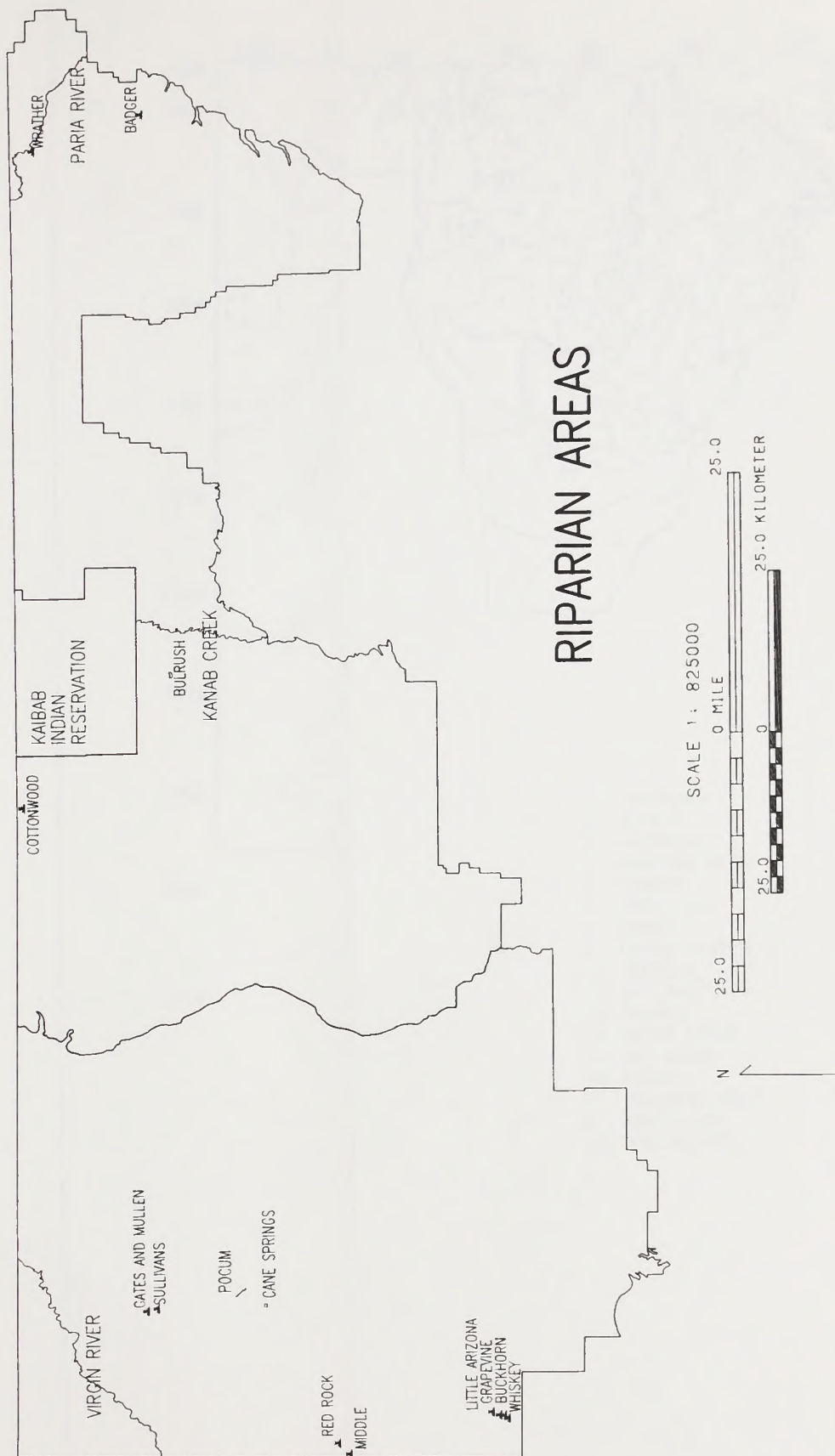
- SLIGHT
- MODERATE
- SEVERE
- CRITICAL
- UNCLASSIFIED



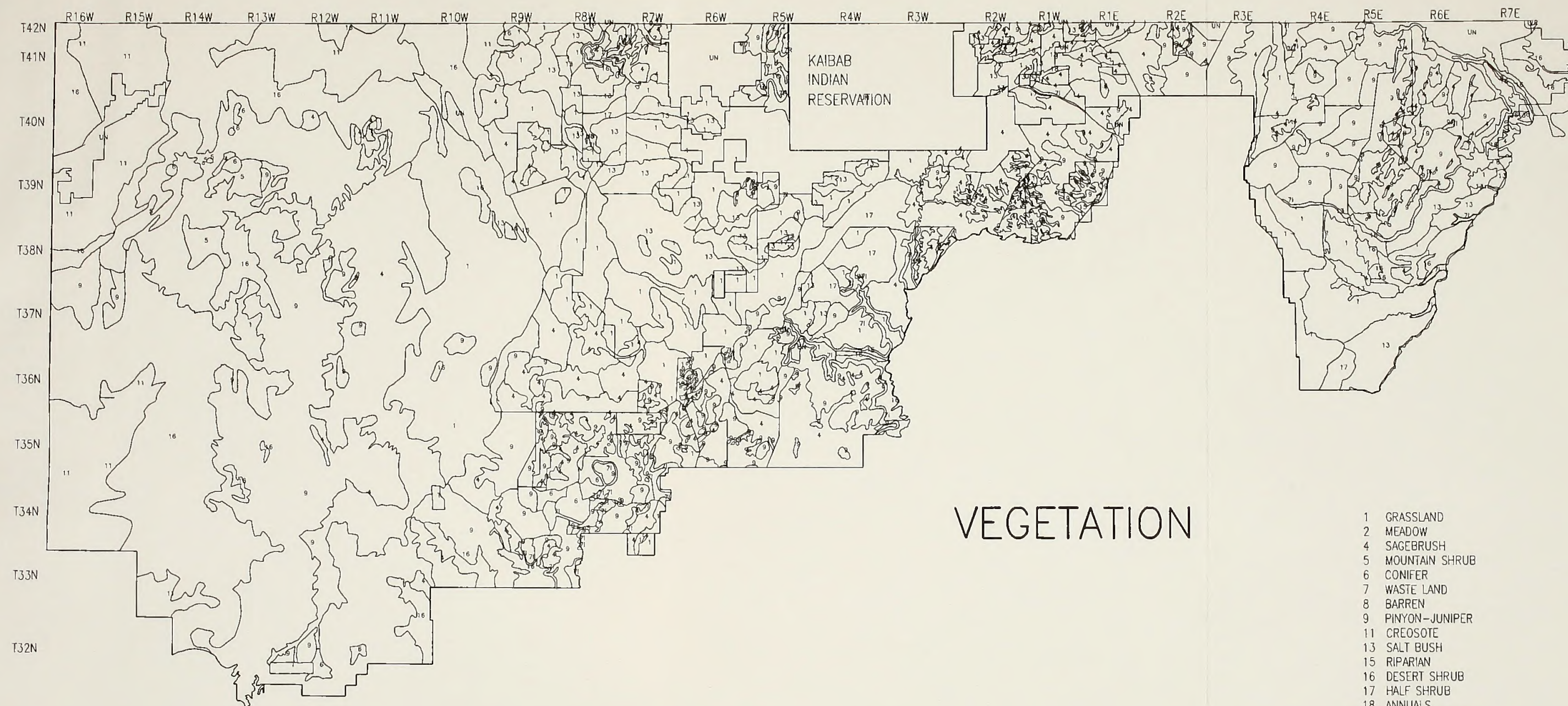


Map III - 11





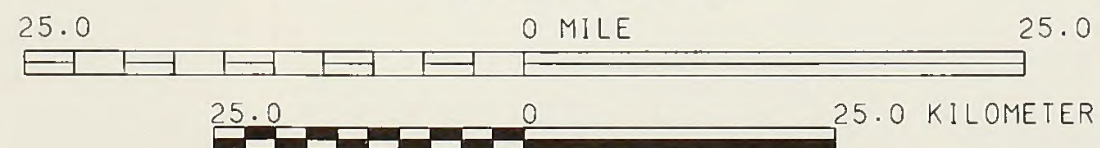
RIPARIAN AREAS

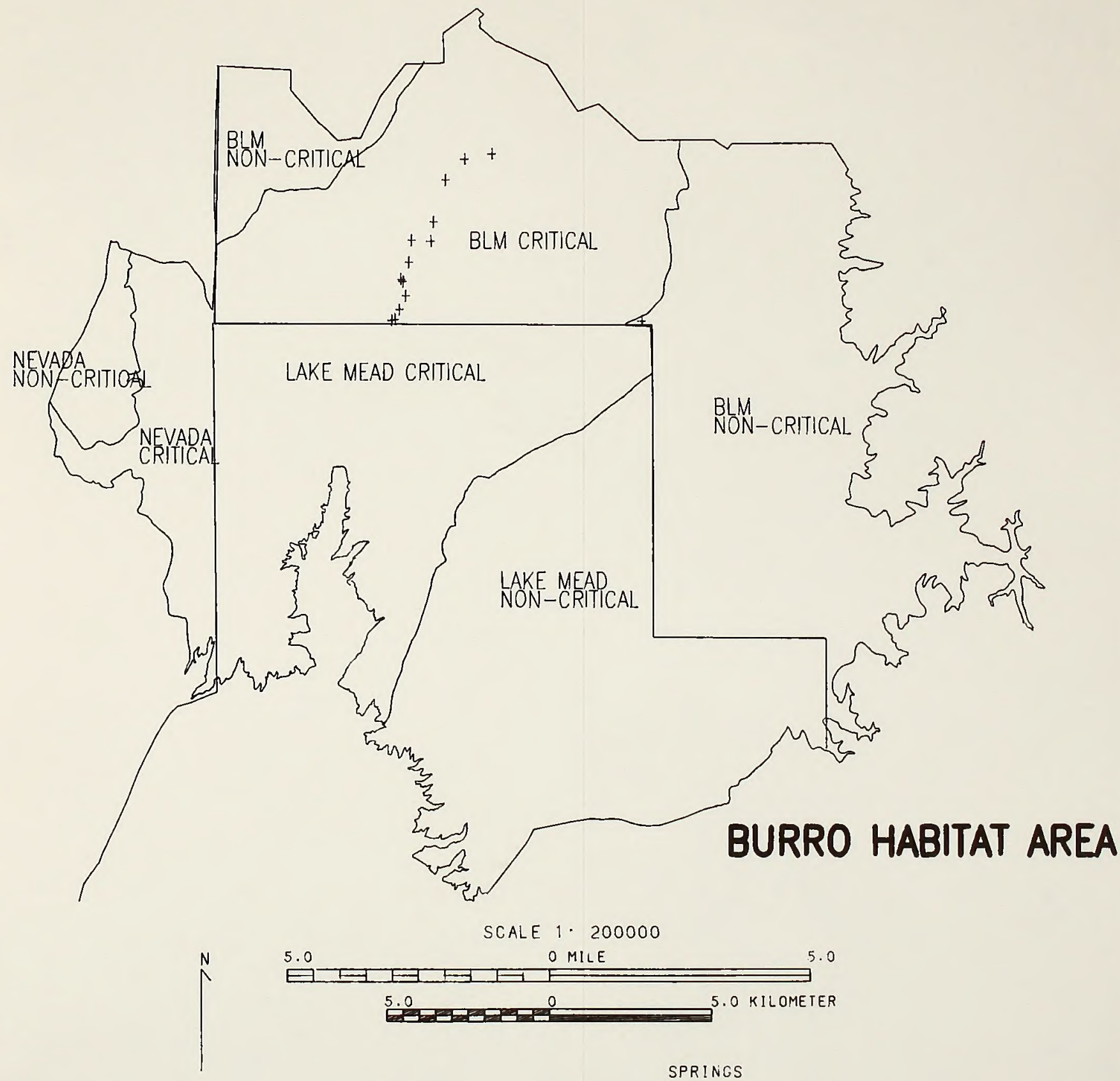


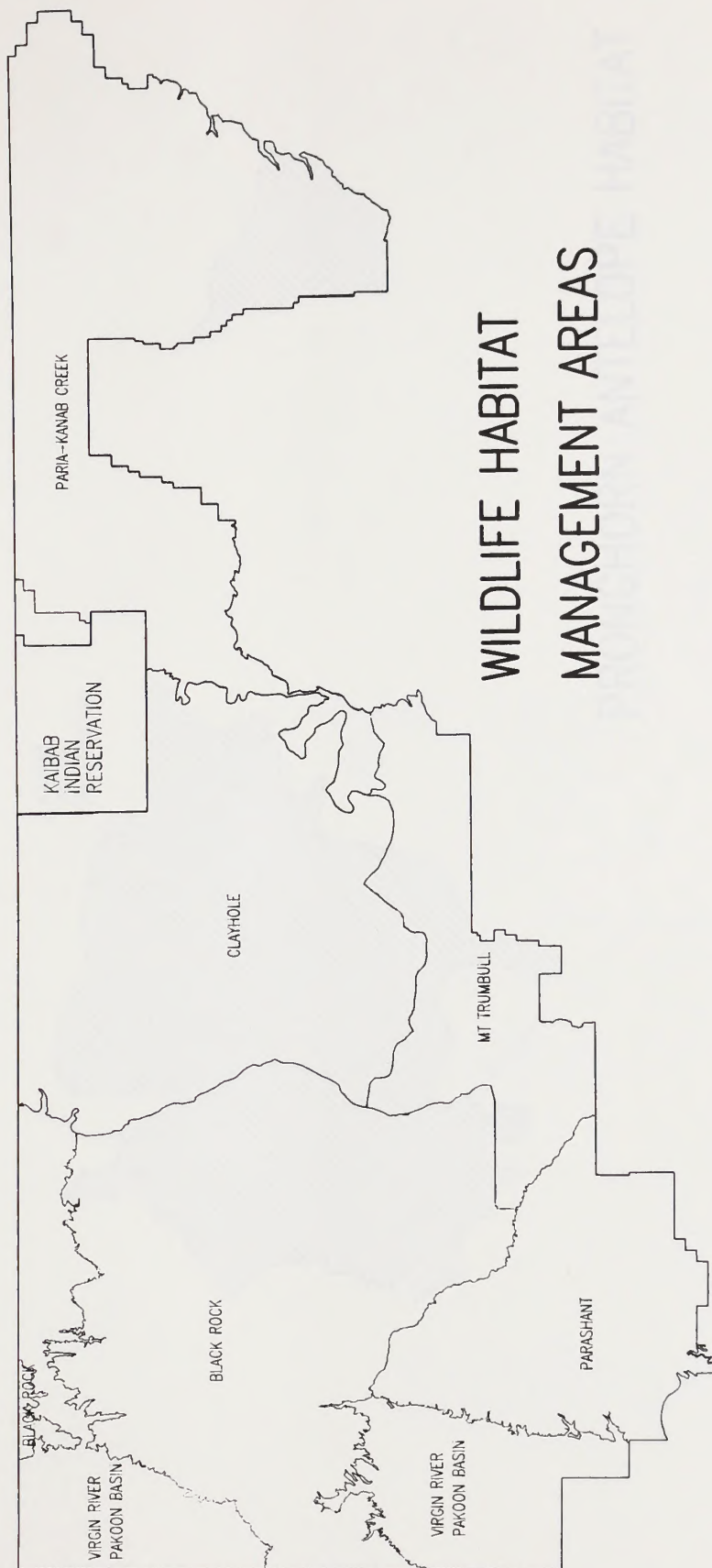
VEGETATION

- 1 GRASSLAND
- 2 MEADOW
- 4 SAGEBRUSH
- 5 MOUNTAIN SHRUB
- 6 CONIFER
- 7 WASTE LAND
- 8 BARREN
- 9 PINYON-JUNIPER
- 11 CREOSOTE
- 13 SALT BUSH
- 15 RIPARIAN
- 16 DESERT SHRUB
- 17 HALF SHRUB
- 18 ANNUALS
- T TREATMENT AREAS
- A AGRICULTURE
- UN UNCLASSIFIED

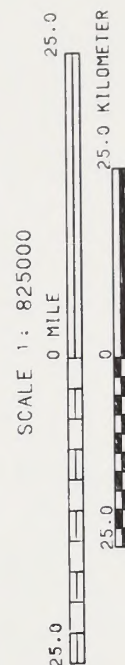
SCALE 1: 500000







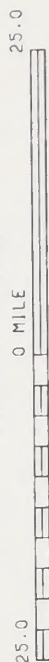
WILDLIFE HABITAT MANAGEMENT AREAS



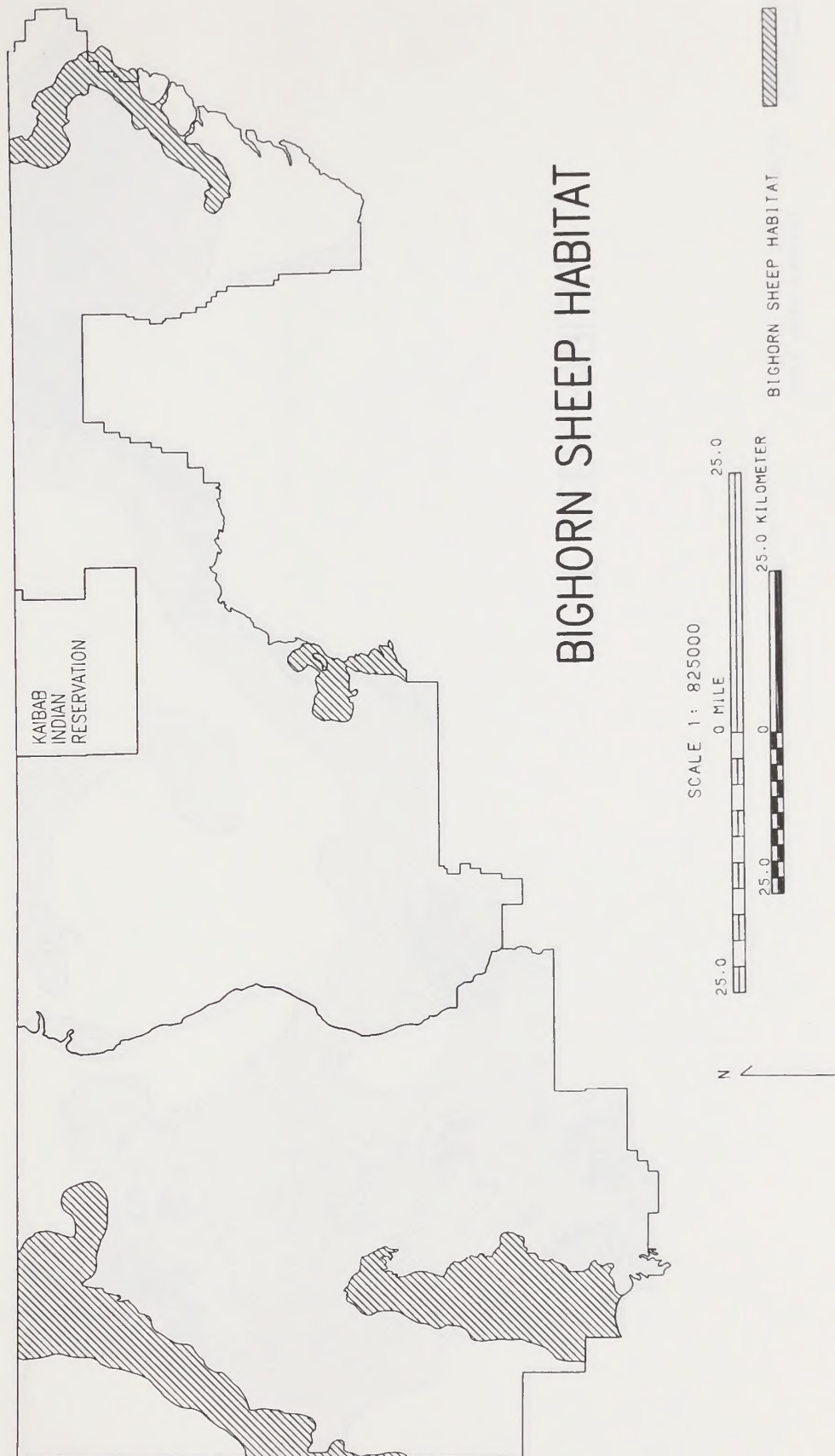


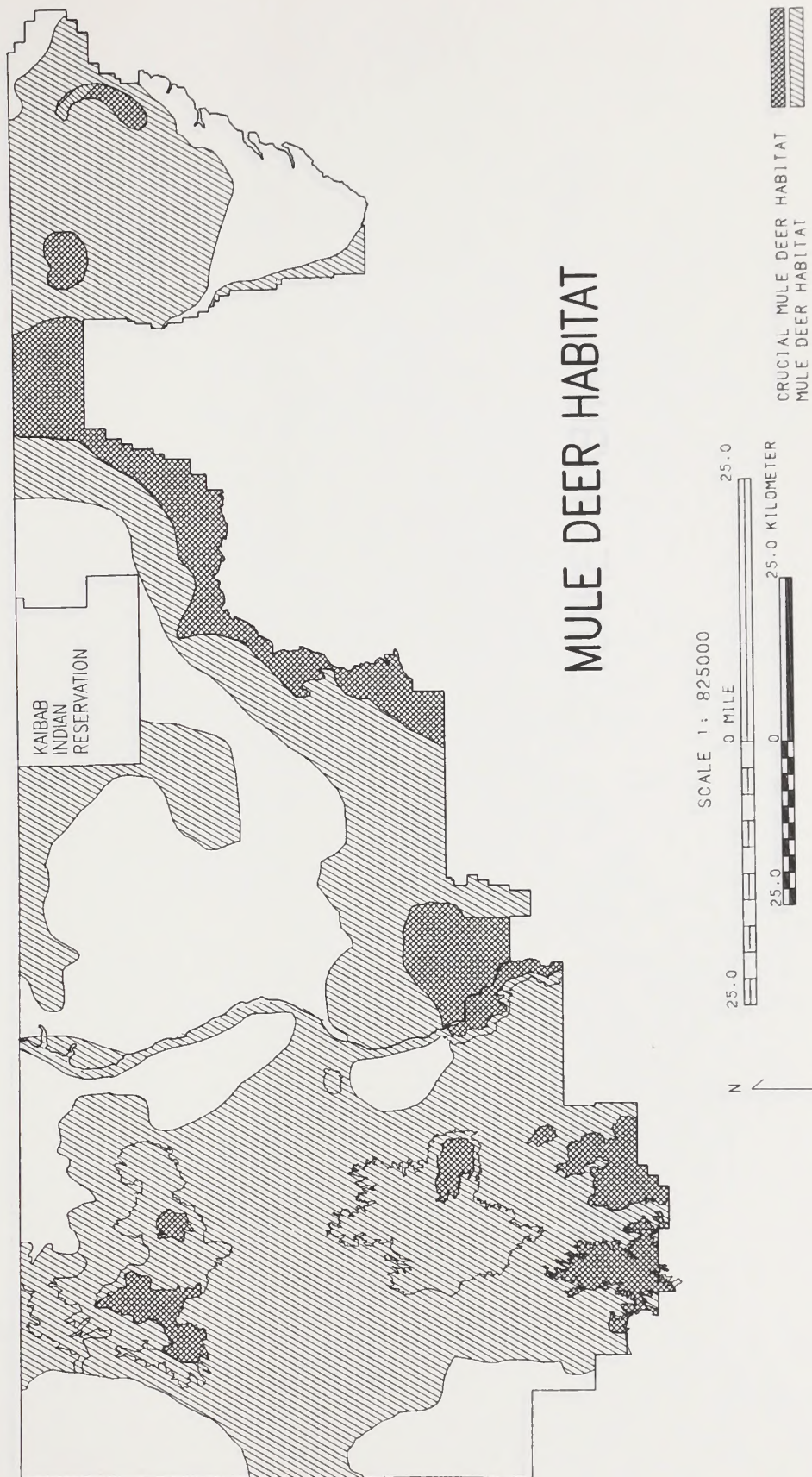
PRONGHORN ANTELOPE HABITAT

SCALE 1 : 825000

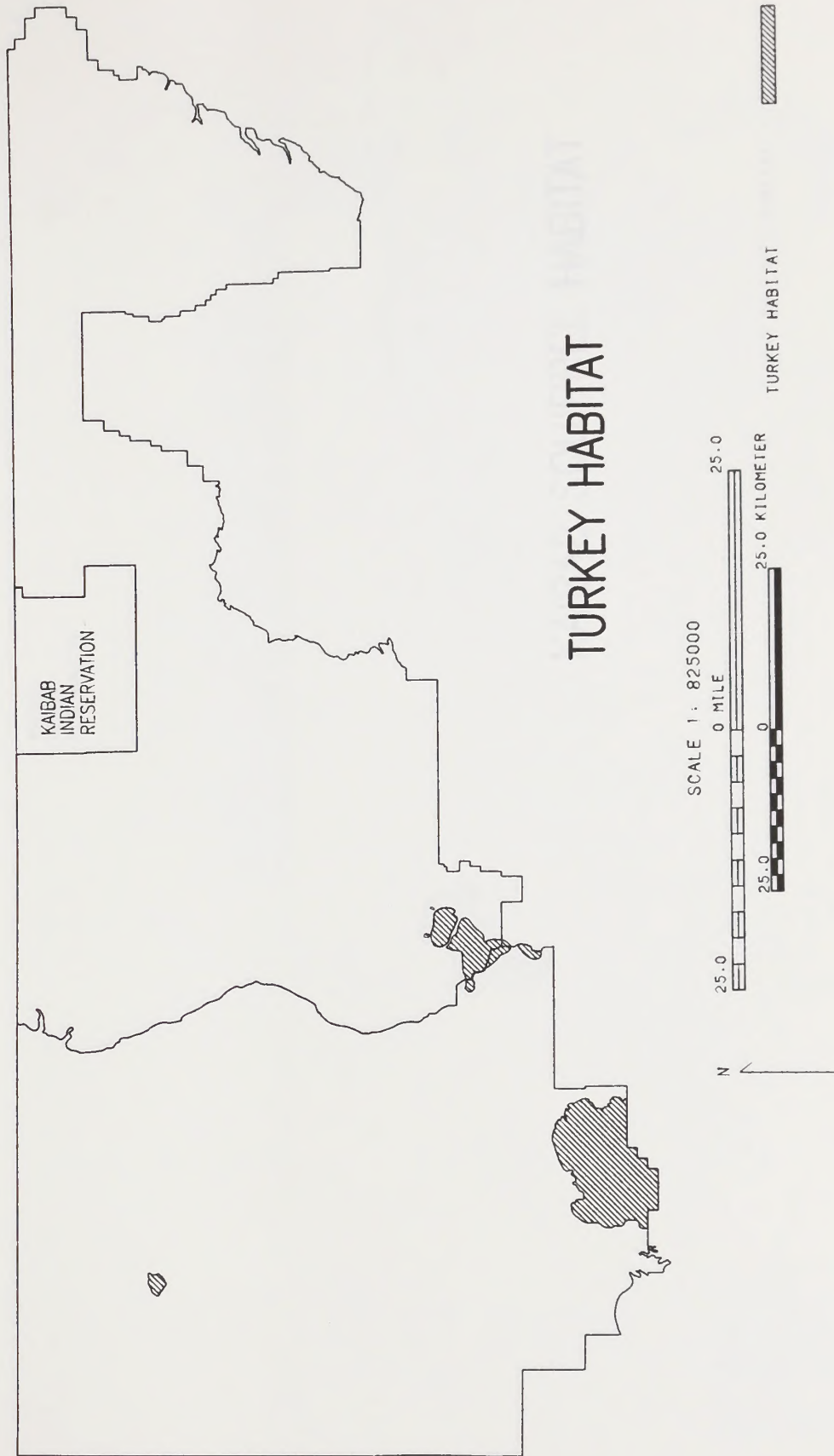


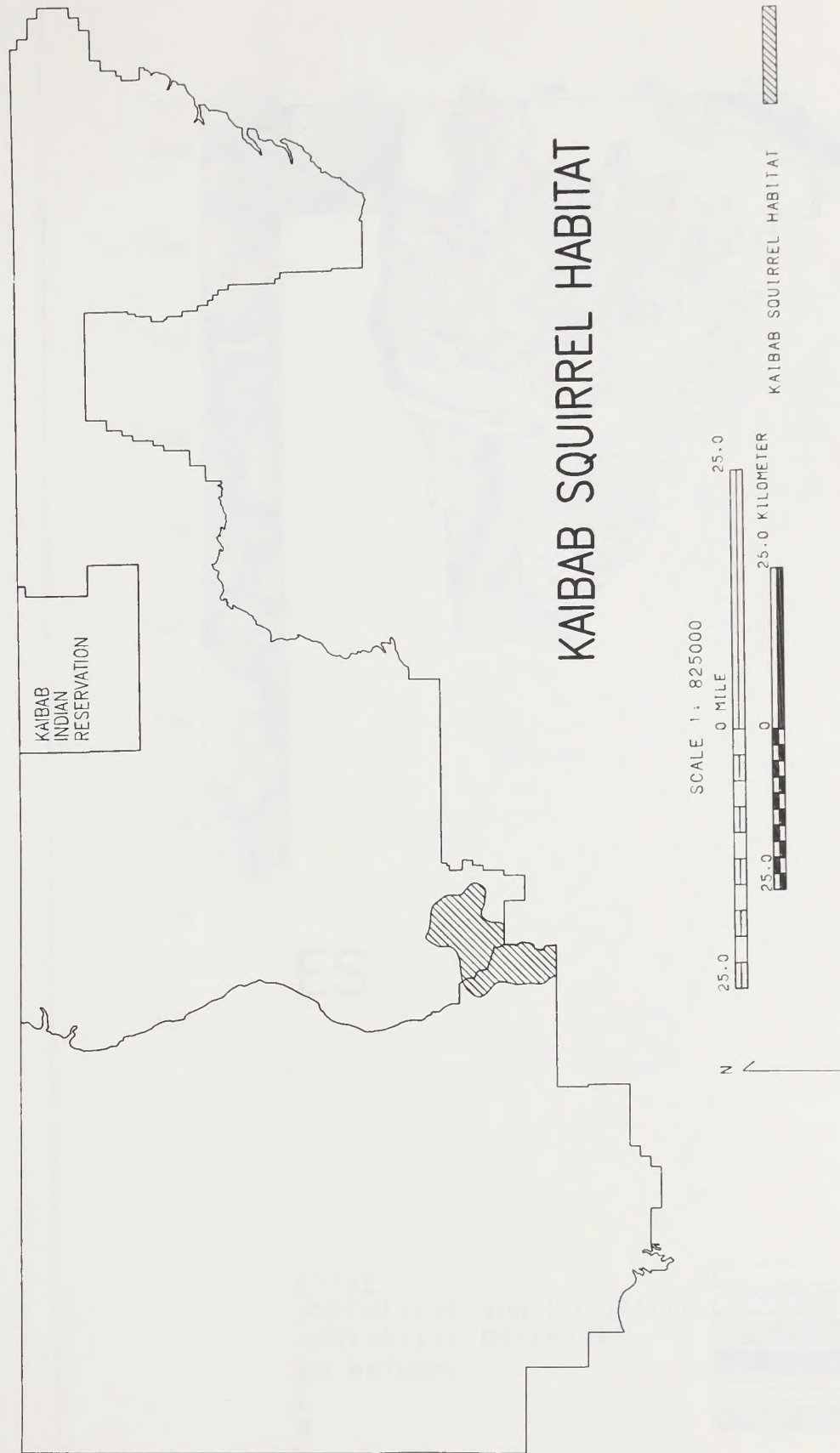
PRONGHORN ANTELOPE HABITAT

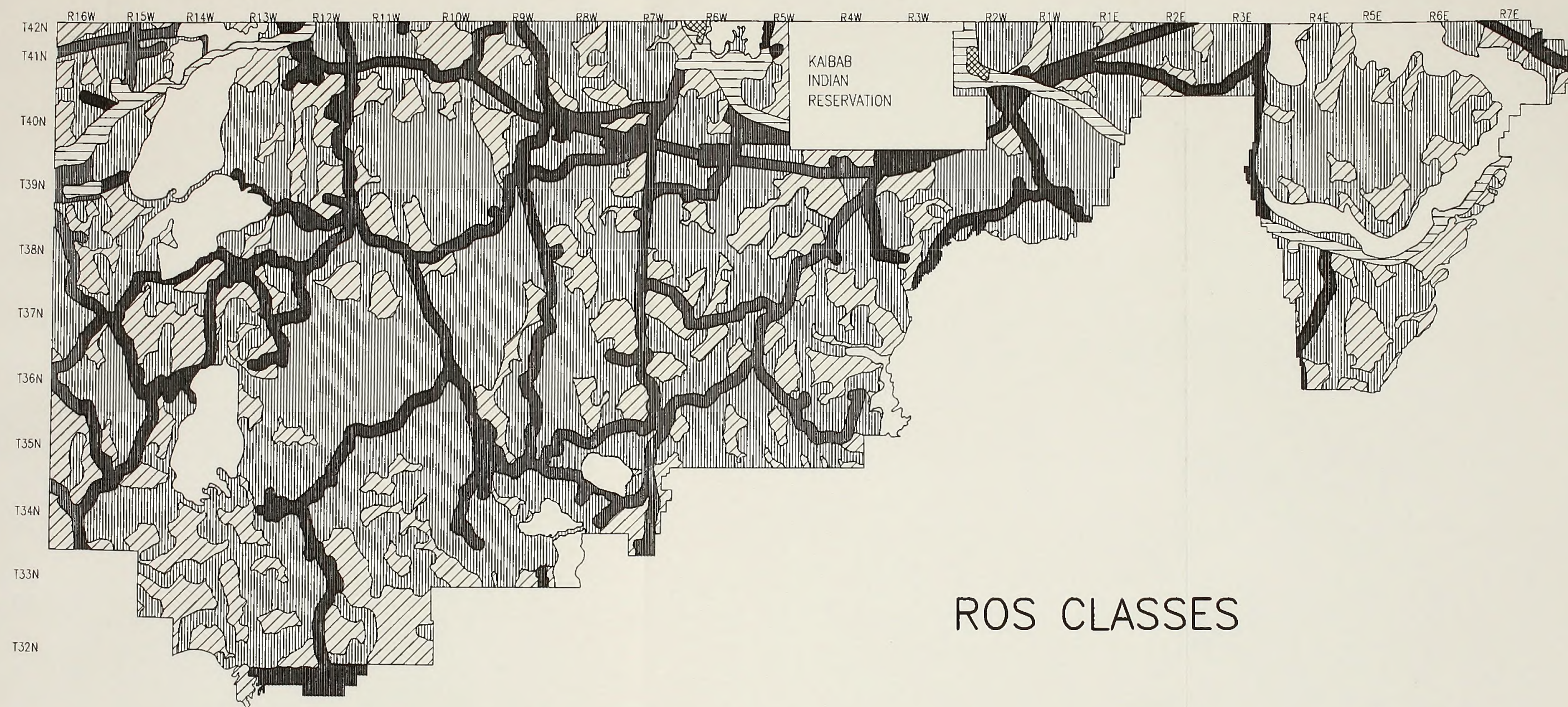




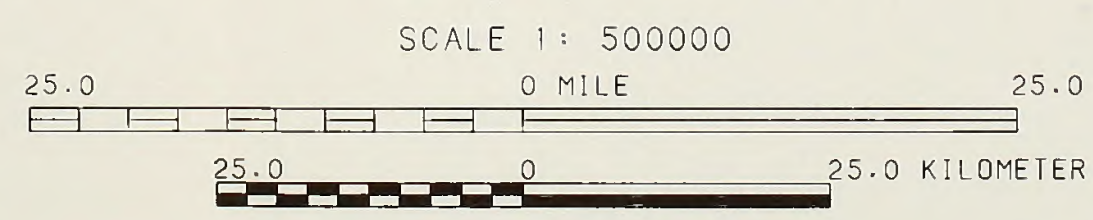
Map III - 19



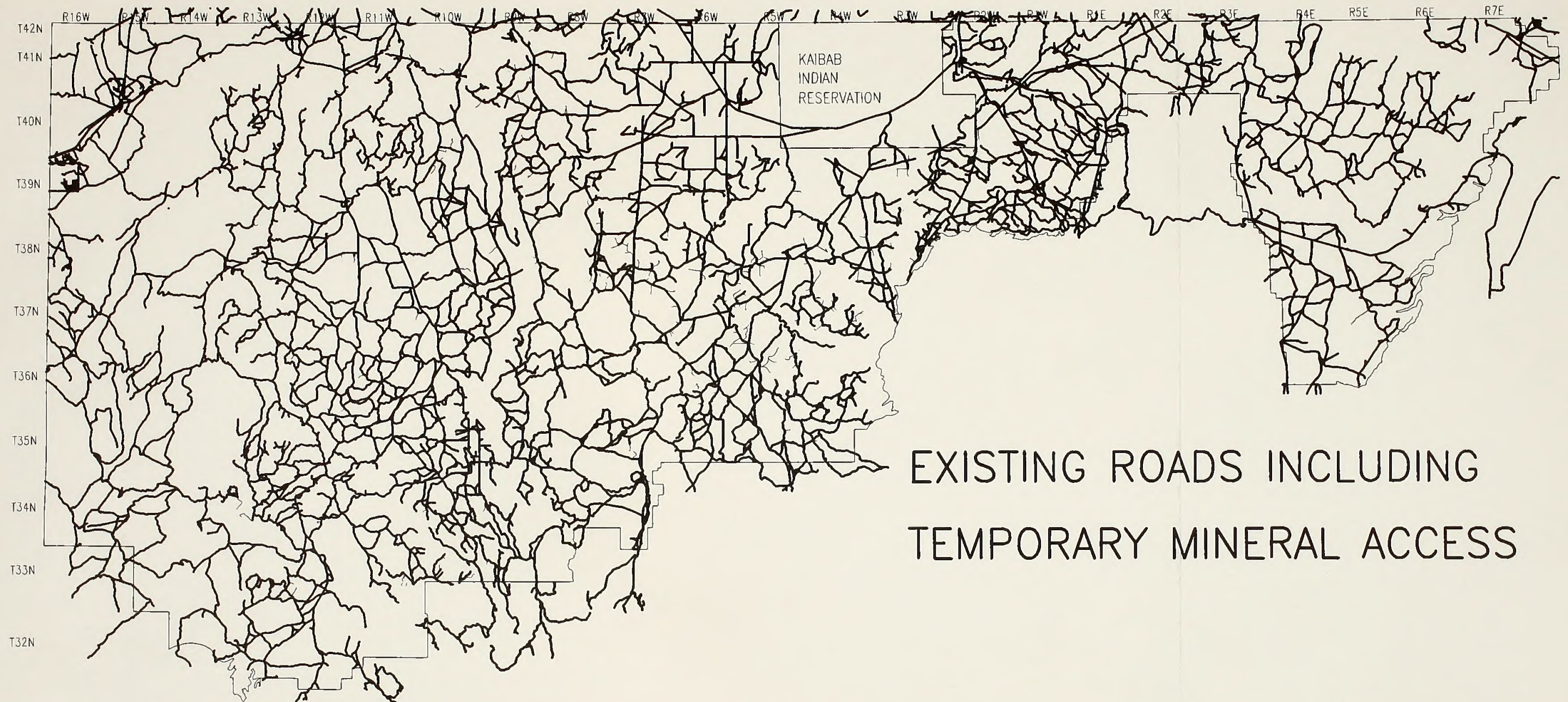




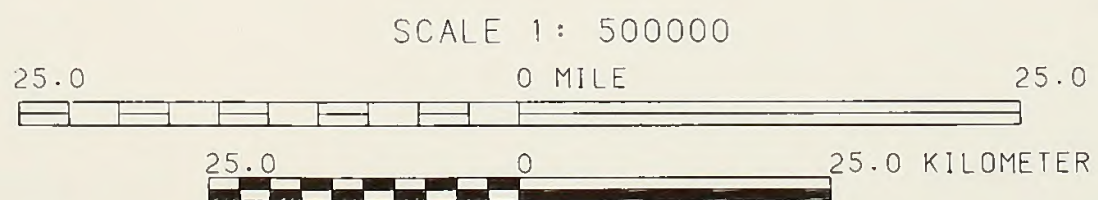
ROS CLASSES



PRIMITIVE	
SEMI-PRIMITIVE NON-MOTORIZED	
SEMI-PRIMITIVE MOTORIZED	
ROADED NATURAL	
RURAL	
URBAN	



N



PERMANENT ROAD
TEMPORARY MINERAL ROAD

ENVIRONMENTAL CONSEQUENCES 4



CHAPTER IV

ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

Chapter IV discusses the environmental consequences of the four alternatives described in Chapter II. The impacts depict the projected change that could occur in the environment by the year 2005 if an alternative was implemented. Impacts are summarized in Table S-7.

ANALYSIS GUIDELINES

The environmental base line is Alternative 1 (No Action); it represents no change in management from what is presently occurring. The change to each environmental component that would occur by the year 2005 under current management is described under Alternative 1. The environmental consequences of management under the other alternatives are compared to the change that would occur under Alternative 1. Additional analysis is provided at the end of each alternative to address cumulative and reasonably foreseeable impacts. All proposed actions, including future uranium mining are analyzed. These impacts are based on assumptions of future activities and their cumulative effect.

ANALYSIS ASSUMPTIONS

The following assumptions were used by the interdisciplinary team in determining impacts.

Funding and personnel will be adequate to fully implement all management actions associated with each alternative within ten years following plan approval. Implementation of the plan will begin in 1990.

All RMP recommendations that require actions outside of the authority of the District Manager and State Director will be accepted and implemented. For example, recommendations for the revocation of existing withdrawals and the establishment of new withdrawals will be favorably acted upon by the Secretary of the Interior.



Gypsum mine near the I-15 Black Rock interchange.

Current trends in resource use will continue as follows:

- Visitor use will grow at an annual rate of between 2 and 5 percent .

- Grazing use will not measurably change over the area and implementation of the district's two grazing EISs and rangeland program summaries will continue as proposed.

- Woodland product use would slightly increase.

- Mineral resource exploration and development will continue at the same rate as it has over the past 10 years. See Appendices 30 and 31 for a description on how these assumptions were made.

- Land acquisitions/exchanges will be made in the public interest by acquiring higher public value lands.

IMPACTS OF ALTERNATIVE 1 (CURRENT MANAGEMENT)

IMPACTS TO LAND RESOURCES

FROM LANDS

- Ownership Adjustments

Exchange or sale of 2,800 acres primarily in the Littlefield/Beaver Dam area was originally proposed for enhancing agricultural enterprises and endeavors in these communities. Current trends are away from agriculture development and favor future residential and recreational developments.

Current management accommodates community requests to use public lands for public benefit. Requests for use are authorized under the Recreation and Public Purposes Act (R&PP) and may include authorizations for parks, landfills, schools, colleges, and cemeteries. In general, requests are for lands near or adjacent to communities. Continuation of processing these requests as they are received could enhance and facilitate local community growth, urban or rural recreation opportunities, public education needs, and other purposes. Few R&PP requests are anticipated throughout the life of this plan.

Acquisition of approximately 129,000 acres of state lands would place these lands into public ownership. Acquired lands would be subject to multiple use policies of BLM, in accordance with specific opening orders that would accompany these acquisitions. Moderate to highly beneficial impacts would result from acquisitions through more efficient and consistent management of resources on consolidated blocks of public lands. Further, acquisitions would generally eliminate the need for land users to deal with more than one government agency for the same use on adjacent lands.

- Right-of-Way Corridors

Current management policy dictates that major linear facilities be placed in the designated right-of-way corridor to avoid random proliferation of such facilities and their impacts. This should provide beneficial social and environmental impacts by confining similar uses to a relatively small area. It should also provide beneficial economic impacts to companies due to the existing data

that is available. The corridor could also result in negative impacts to uses not compatible with the proposed use.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Federal lands that are open to entry under the mining laws are subject to patenting of claims if valuable minerals are found. Issuance of patents are not necessary for mineral production and are not discretionary if certain conditions are met.

One patent application for 130 acres is pending and others may be filed during the life of the plan. This could result in a negative impact by breaking up the existing blocked federal land pattern. Conversely, lands in private ownership benefit tax bases and provide private economic development opportunities. In any case, less than one percent of the acreage in the Arizona Strip District is likely to have any patent application filed on it. Furthermore, only a small percentage of the lands applied for would likely receive patents, given the stringent requirements which must be met.

CONCLUSION

Designation of a right-of-way corridor would benefit social and environmental values by consolidating compatible uses. Authorizing R&PP requests could benefit local communities by providing lands needed for growth and recreation purposes. Land acquisitions would further consolidate large blocks of public land, which would allow more efficient and consistent management of all resources. Mineral patents could contribute to, in a minor way, a fragmented land pattern.

IMPACTS TO MINERAL RESOURCES

FROM LANDS

- Ownership Adjustments

The transfer of 2,800 acres of public land could negatively impact the prospect of mineral development on these lands. The majority of these lands are located in areas identified as having high potential for the occurrence of locatable minerals and moderate potential for oil and gas. Once these lands leave federal ownership and become developed through the building of structures, the likelihood of mineral exploration being conducted on the tracts is minimal. This would be the case even if the

minerals were retained in federal ownership. Without exploration, chances are small that any mineral resources which may underlie the tract would be developed through the life of this plan.

The acquisition of 129,000 acres of state land could have a positive impact on the development of mineral resources which may underlie these lands. A significant portion of these lands are located in areas which have a high potential for the occurrence of locatable minerals, such as uranium, and a moderate potential for the occurrence of leasable minerals such as oil and gas. The blocking of land ownership patterns has a positive effect on mineral exploration and development activities as less potential problems exist between land owners and operators would be dealing with one entity for major projects rather than two or three.

- Withdrawal Revocation

Revocation of the Turbinella-Gamble Oak protective withdrawal would have a positive impact on the development of any locatable and leasable minerals which may underlie the tract. This withdrawal covers some 154 acres of land identified as having a high potential for the occurrence of locatable minerals and moderate potential for the occurrence of oil and gas. Currently the area is withdrawn from mineral entry and leasing.

Revocation of the Virgin River scenic withdrawal would not impact mineral development because the land would remain closed to mineral activity due to wilderness designations.

Revocation of the Boulder Canyon withdrawal would have a positive effect on the development of any locatable minerals which may underlie the tract. Currently the area is withdrawn from mineral entry under a Bureau of Reclamation first form withdrawal in order to protect potential dam sites. This withdrawal covers some 4,709 acres of land identified as having a moderate potential for the occurrence of gold.

CONCLUSION

With the exception of land disposals identified in the existing MFP, the continued management as prescribed in this alternative would encourage mineral resource development on the public lands. Lands would generally remain open to mineral resource development and certain other lands currently withdrawn would become available for exploration and development. Withdrawal revocation would benefit mineral activity by making more land available for exploration.

IMPACTS TO CULTURAL RESOURCES

FROM LANDS

Through the land exchange program, over the life of the RMP, 129,000 acres of state land and their yet unknown and uninventoried cultural properties are expected to come under federal protection. However, these cultural properties would still be subject to natural processes, vandalism, and off-highway vehicle (OHV) damage. Ranger patrols and the National Environmental Protection Act (NEPA) process would mitigate much of the human-caused negative impacts to cultural properties but without special management, vandalism and OHV damage would continue at close to current levels (Table IV-1).

FROM CULTURAL

The BLM would continue active surveillance of cultural properties through cooperative arrangements. However, priority cultural areas would not benefit from aggressive protective measures under this alternative and would therefore be subject to vandalism. Negative impacts of erosion and public visitation (resulting in inadvertent adverse effects) would continue. Such deterioration, if unchecked, would result in the loss of significant information and public values on over 2,000 recorded sites. Opportunities to acquire private land and manage their additional cultural properties within the RMP area's priority areas would not occur (Table IV-1).



TABLE IV-1
IMPACTS TO PRIORITY CULTURAL RESOURCES BY ALTERNATIVE

Cultural Area	Deterioration Type	Alternative			
		1	2	3	4
Paria Plateau	I	Mod	Mod	Low	Mod
	II	Mod	Mod	Low	Low
	III	Low	Low	Low	Low
	IV	Mod	Mod	Low	Mod
Lost Spring Mountain	I	High	Low	Low	High
	II	Mod	Low	Low	Mod
	III	Low	Low	Low	Low
	IV	Mod	Low	Low	Mod
Moonshine Ridge	I	High	Low	Low	High
	II	Mod	Low	Low	Mod
	III	Low	Low	Low	Low
	IV	Mod	Low	Low	Mod
Johnson Spring	I	High	Low	Low	High
	II	Mod	Low	Low	Mod
	III	Low	Low	Low	Low
	IV	Mod	Low	Low	Mod
Nampaweap	I	Mod	Low	Low	Mod
	II	Low	Low	Low	Low
	III	Low	Low	Low	Low
	IV	Mod	Low	Low	Mod
Witch Pool	I	Mod	Low	Low	Mod
	II	Low	Low	Low	Low
	III	Low	Low	Low	Low
	IV	Mod	Low	Low	Mod
Little Black Mountain	I	High	Low	Low	High
	II	Mod	Low	Low	Mod
	III	Low	Low	Low	Low
	IV	Mod	Low	Low	Mod

Impacts represented are estimates and do not reflect a higher negative impact that may affect cultural resources in certain site categories or in areas outside the ACECs.

Deterioration Type: I = Vandalism
 II = OHV
 III = Natural Process
 IV = BLM Authorized (Permits and Projects)

FROM WOODLANDS

Harvest of firewood under this alternative would allow some damage to undiscovered sites where woodcutting occurs. This would come from OHVs driven into the area to load wood. Woodcutters also can vandalize sites as they access areas to cut and load wood.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Through Section 106 of the National Historic Preservation Act compliance process outlined in Table II-1, all cultural properties of National Register eligibility identified through review of a plan of operation would either be protected or impacts to them mitigated. Review of a mining notice does not involve a discretionary decision-making on the part of the BLM and therefore does not constitute an undertaking as specified in Section 106 of the National Historic Preservation Act of 1966 and is not subject to procedural requirements of 36 CFR 800. However, 43 CFR 3809 specifically provides for the protection of cultural properties by prohibiting mining operators from knowingly disturbing or damaging them. The need for a cultural resource field inventory in response to a notice of intent should be determined on the basis of professional judgment and is left to the discretion of the area manager. Indirect impacts to cultural resources resulting from improving road access into formerly remote areas are recognized as potentially adverse. Current research will determine if and where these impacts are occurring. Impacts to cultural resource values in the form of artifact breakage or destruction of structural features resulting from OHV activity associated with prospecting could also occur.

The 106 compliance process and impacts described above for locatable minerals would be the same for leasable minerals.

FROM RECREATION

The majority of the recreational pursuits involve OHVs, such as woodcutting, casual use, and hunting. Off-road vehicular travel would continue to negatively impact archaeological sites throughout the district. Direct vehicular damage occurs when motorized vehicles run over cultural properties. Artifacts are broken, lost or moved out of context, resulting in the loss of information value. Recreationists also can vandalize sites by arrow-head collecting, pot hunting or misuse of land by OHVs.

CONCLUSION

Continuation of current management (Alternative 1) would negatively impact the priority cultural areas with moderate to high losses of cultural properties occurring over the life of the RMP.

IMPACTS TO SOIL, WATER AND AIR RESOURCES

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Present levels of exploration and development of mineral resources is not anticipated to have substantial impacts to any identified sensitive watershed areas. Locatable mineral exploration impacts to soils are minor, attributable primarily to overland travel and locations where access or drill pads have been bladed. Significant erosion events are eliminated with proper mitigation and reclamation. Approximately 415 acres have been impacted by exploration throughout the district since 1980.

Production activities have resulted in 335 acres of disturbed surface area/soils within the district. Problems with sediment loading or transport is eliminated by using proper design criteria to ensure full containment of sediments within the mine yard or other disturbed areas.

Throughout the life of this plan, an additional 1,355 acres of surface disturbance from exploration and mining activities are anticipated. Impacts are adverse to soils and vegetation on a temporary basis, but are mitigated adequately by successful reclamation of the disturbed sites. Water quality concerns are mitigated through permitting, project design, reclamation, and compliance checks. A low negative impact to air quality occurs at mine sites and on haul roads. Proper design criteria and reclamation requirements eliminate the potential of significant impacts to soil water or air resources.

Exploration to date has not caused any significant adverse impacts to existing surface water impoundments. Mining activities have resulted in minor adverse impacts to a few existing surface waters and at least one perennial alluvial aquifer has been dewatered as a result of adjacent mining activities. Extensive water quality monitoring is still being conducted within Kanab Creek drainage to ensure that mining activities do not impact Kanab Creek or the Colorado River.

CHAPTER IV- ENVIRONMENTAL CONSEQUENCES

Empirical data has been and will continue to be collected by mining industries that have the potential to impact ground water. To date, this data has demonstrated that ground water inflow rates into underground mines is generally of short duration and of limited aerial extent. The depths of mining for uranium, generally is well above the Redwall and Muav Formations, which are the major aquifer of concern. Further, the sedimentary host rock surrounding these deposits is highly impermeable, precluding the potential for long term impacts to this regional drinking water quality aquifer. Absorption of heavy metals and radio-active constituents on the surface of clays as well as chemical reactions with limestone stratas tends to minimize or eliminate impacts to water quality.

Exploration activities cause only minor adverse impacts to air quality. These impacts are caused mostly by vehicle travel which results in fugitive dust. Fugitive dust is not considered a pollutant subject to federal or state regulations. There is an adverse impact from exploration drilling due to the noise produced by the drilling operations. This is generally short in duration.

Extensive modeling of air and radiological impacts are conducted for every uranium mine prior to approval. Actual field measurements are obtained to check the models. To date, none of the modeling studies have demonstrated that any of the statutory thresholds for air quality have been surpassed and consequently no significant impacts have occurred.

Impacts to sensitive receptors is of primary concern due to the close proximity of class I airshed at Grand Canyon National Park to some of the high potential mineral areas and active mining operations. Based on known impact studies, a full scale mining operation would have to be closer than 1,000 meters from the Grand Canyon National Park boundary in order to surpass the statutory levels of significance which are designed to protect class I airshed. The 1,000 meter threshold assumes no mitigation for dust emissions. This distance could be less depending on the magnitude of dust emissions and type of mitigation, if any.

Under current management, the entire district is open to mineral leasing for oil and gas (excluding wilderness areas) with no special leasing stipulations designated to protect sensitive watersheds. Approximately 43 wells have been drilled creating 345 acres of watershed disturbance. Most of the recent exploration activities have been east of Fredonia. Standard oil and gas stipulations have been incorporated into leases which require reclamation and other procedures to prevent permanent

adverse environmental impacts. No identified sensitive watershed areas have been impacted by leasable mineral activities.

Appendix 30 and Map III-1 describe projected oil and gas activities throughout the life of the plan and depict oil and gas potential. Based on assumptions and projections, an additional 65 acres of exploration disturbance and 350 acres of development disturbance are anticipated. Standard leasing stipulations require basic reclamation procedures. Especially fragile watershed with highly erosive saline soils could, however, be impacted (assuming some exploration or development would take place on them). These impacts would be addressed in the application for permit to drill (APD) process.

FROM WATERSHED

Under Alternative 1, large areas with moderate to severe erosion are in unsatisfactory watershed condition. These areas are thought to be in a degraded state due to the early history of livestock grazing on the Arizona Strip. Most of these areas contain fine textured saline soils which are highly susceptible to accelerated erosion. As vegetation was removed the intense summer rain storms caused accelerated run off into ephemeral drainage systems, encouraging a long process of upward channel headcutting. BLM has since adjusted stocking rates to balance annual production, achieve better grazing distribution, and has established proper utilization rates. However, due to the fine texture of saline soils, many of these areas are still being cut and require some channel stabilization measures. In some areas improvements in vegetative cover is also required. Hobbie Canyon, Johnson Run, Lang's Run, Wolf Hole Valley, Upper Bull Rush Wash, and Lower Hurricane Valley have been designated as priority areas for development of watershed activity plans. The rest of the areas having moderate to severe erosion problems would be managed for improvement through development of watershed objectives in AMPs.

FROM RIPARIAN

Current riparian management is being accomplished through the watershed, range, and wildlife programs. Due to past use many riparian areas have been heavily used by grazing ungulates. This heavy use has degraded and trampled vegetation and lowered water quality. Under current management many springs have been fenced and several different kinds of grazing systems have been employed. Conditions on many priority riparian areas have improved and should continue to improve as management actions are implemented.

FROM FORESTRY/WOODLAND

Green fuelwood cutting is occurring on about 21,780 acres within the district. Dead and down wood can be cut anywhere except wilderness. This represents a minor adverse impact on soil, water, and air resources, mainly as a result of off road vehicle use. Off-highway vehicle use crushes vegetation and disturbs the surface, making it vulnerable to accelerated water erosion by channelizing runoff in the vehicle tracks. Wind erosion is also accelerated, to a minor extent, due to the freshly disturbed soil.

Current direction for managing ponderosa pine is to maintain the stands primarily by fire control. These practices would have a beneficial impact on the areas' watershed. Ground cover would be maintained, new roads or upgraded roads for timber harvest would not be needed. An insect infestation or disease could be facilitated by an old growth stagnant stand of ponderosa pine and result in many trees dying. The ground litter, however, should remain and provide the needed watershed protection.

FROM OHV

Currently, the Shivwits Resource Area has OHV limitations over most of the area and closures in wilderness areas. The Vermillion Resource Area has closures in wilderness areas, but the remainder is open to off-highway use. Increasing OHV use of fragile/saline soils near Fredonia and St. George is causing long-term scarring, destroying vegetation and cryptogamic cover, and thus increasing wind and water erosion. Long-term negative impacts can be expected to spread deeper into the Arizona Strip and intensify on lands close to towns and developed areas. Salinity and sedimentation contribution to the local drainages would continue to accelerate under these conditions.



FROM TRANSPORTATION

Currently, there are over 5,402 miles of road on the district. Most of these roads came into existence many years ago as a result of grazing activities. Many go through drainages, across salty bottom lands and are not located in the most environmentally sound locations. As a result, many roads cause substantial adverse environmental impacts to soil loss, sedimentation, salt loading, and air quality. Years of back country existences have resulted in many areas with parallel road segments due to abandonment of areas which have been eroded out. Under current management, little attention is focused on this situation, unless a project is proposed in an area where this exists. In such cases, road modifications are helping resolve environmental problems. To date, mining companies on the Arizona Strip are predominantly responsible for helping the bureau modify roads. However, the percentage of roads that have been improved is minor compared to the size of the effort required to reduce the adverse impacts mentioned above.

FROM FIRE

Fire has both a minor beneficial and adverse impact on soil productivity and water quality as a result of ash. Generally fire decreases short-term and increases long-term effective vegetative ground cover and is therefore beneficial to watershed condition. However, both suppression activities and prescribed burns can have adverse impacts on soil loss due to the use of hand tools or heavy equipment in constructing firelines. These activities are not usually rehabilitated and cause short term soil loss, predominantly from wind. These impacts are usually small and remain localized and do not have much impact on overall watershed conditions. They may have minor adverse impacts on sediment or salt loading on drainage system depending on their proximity to the drainage system. Smoke adversely impacts air quality for a short duration. The major impact is to visual quality.

CONCLUSION

Current management would result in improved condition of many riparian areas on the Arizona Strip due to development and implementation of AMPs and HMPs. Increased OHV use on fragile/saline soils would increase wind and water erosion and increase downstream sedimentation and salinity. Mineral exploration and development would have a moderately negative, but temporary, impact on soil and vegetation in small areas. Impacts from fire suppression strategies are minor but adverse. Adverse impacts brought about by past road construction are improving, but more attention is necessary.

IMPACTS TO SPECIAL STATUS SPECIES

Qualitative impacts to special status species are summarized in Table IV-2.

FROM LANDS

- Ownership Adjustments

From an MFP decision to transfer approximately 5,000 acres to private ownership for agricultural purposes, twenty-two hundred acres were exchanged for bighorn sheep range near Kingman. This leaves about 2,800 acres yet to be sold or exchanged, most of which is in the low desert area near Littlefield, Arizona. Proposed transfers that could negatively affect the desert tortoise or their habitat, particularly where category I or II is involved, would not be authorized unless the net effect is positive or neutral and would not jeopardize their recovery.

Transfers of lands that support populations of woundfin minnow, Virgin River roundtail chub, or the Virgin River spinedace is not proposed under this alternative. The Endangered Species Act (ESA), executive orders, and bureau policy prohibits such actions.

Land acquisitions through exchange with the State of Arizona would have long term positive benefits to special status species such as Siler pincushion cactus. Land acquisition of important special status species habitats would promote the recovery of those listed and candidate species.

State and/or private lands along the Virgin River supporting populations of woundfin minnow, Virgin River roundtail chub, and the Virgin River spinedace are identified for acquisition as opportunities arise in exchange for other public lands in the district. This would promote recovery of the species and facilitate eventual recovery. This would be a long term positive impact to the special status fish species.

BLM would actively seek opportunities to acquire tortoise habitat where it would improve the likelihood of recovery.

The existing R/W corridor passes through proposed category 1 habitat of the desert tortoise on the Beaver Dam Slope. Increased utilization of this corridor could negatively impact tortoise populations and habitat. Disturbance during construction could alter habitat features,

i.e. forage and cover site opportunities. Stipulations necessary to eliminate impacts or improve the likelihood of recovery of tortoise would be required. Future power-line construction routes across the Beaver Dam Slope would be considered on a case-by-case basis to avoid impacts to desert tortoise.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

The USFWS is consulted for their biological opinion when a proposed activity may affect threatened or endangered species. Activities that would jeopardize the continued existence of any threatened or endangered species would not be authorized.

For locatable mineral exploration and development covered under a notice or plan of operation (43 CFR 3809 regulations), there would be no long term negative impacts to special status species. Negative impacts could occur to special status species in the case of casual use where a notice or plan of operation is not required. Monitoring studies conducted since 1983 have not documented any cases where impacts to special status plants have occurred. Exploration and assessment work has negatively impacted desert tortoise habitat by creating new roads and trails.

Policies concerning the protection of special status species also apply to leasable mineral resource operations. Stipulations to protect special status species may be applied to notices of intent to conduct geophysical operations (NOI), applications for permit to drill (APDs), and sundry notices (SNs) which amend APDs.

Through the above process there would be no long term impacts associated with leasable mineral activities. Short term impacts to special status species in the form of brief but intense human activity could occur.

FROM OHV

Damage to Siler and Brady pincushion cactus from OHV use has been observed in monitoring areas since 1984. Impacts from OHVs would increase with increasing populations at St. George, Utah which is near the Fort Pierce Siler cactus population. Here the OHV impacts would have a negative impact on that population resulting in a decline in the Fort Pierce population. However, this cactus outside the Fort Pierce area is both numerous and widespread across about 330,000 acres of habitat and potential habitat. Overall, under this alternative the cactus should increase slightly in area and number of cactus.

TABLE IV-2
QUALITATIVE IMPACTS OF ALTERNATIVES
TO FEDERALLY-LISTED AND CANDIDATE SPECIAL STATUS SPECIES

ANIMALS

Species	Status	Alternative			
		1	2	3	4
Woundfin minnow (<i>Plagopterus argentissimus</i>)	Endangered	Maintain	Slight increase	Slight increase	Maintain
Peregrine falcon (<i>Falco peregrinus anatum</i>)	Endangered	Slight increase	Increase	Increase	Slight increase
Virgin River chub (<i>Gila robusta seminuda</i>)	Proposed Endangered	Maintain	Slight increase	Slight increase	Maintain
Desert tortoise (<i>Xerobates agassizii</i>)	Endangered	Maintain	Slight increase	Slight increase	Maintain
Ferruginous hawk (<i>Buteo regalis</i>)	Category 2	Maintain to slight increase	Maintain to slight increase	Maintain to slight increase	Maintain to slight increase
Swainson's hawk (<i>Buteo swainsoni</i>)	Category 2	Maintain to slight increase	Maintain to slight increase	Maintain to slight increase	Maintain to slight increase
Western yellow-billed cuckoo (<i>Coccyzus americanus occidentalis</i>)	Category 2	Maintain to slight increase	Maintain to slight increase	Maintain to slight increase	Maintain to slight increase
Virgin River spinedace (<i>Lepidomeda mollispinus mollispinus</i>)	Category 2	Maintain	Slight increase	Slight increase	Maintain
Virgin springsnail (<i>Pyrgulopsis deserta</i>)	Category 2	Unknown	Unknown	Unknown	Unknown
Grand Wash springsnail (<i>Pyrgulopsis bacchus</i>)	Category 2	Unknown	Unknown	Unknown	Unknown
Southwestern willow flycatcher (<i>Empidonax traillii eximius</i>)	Category 2	Unknown	Unknown	Unknown	Unknown
Gila monster (<i>Heloderma suspectum</i>)	Category 2	Maintain to slight increase	Maintain to slight increase	Maintain to slight increase	Maintain to slight increase
Southern spotted owl (<i>Strix occidentalis lucida</i>)	Category 2	Unknown	Unknown	Unknown	Unknown
Spotted bat (<i>Euderma maculatum</i>)	Category 2	Maintain to slight increase	Maintain to slight increase	Maintain to slight increase	Maintain to slight increase
Marble Canyon kangaroo rat (<i>Dipodomys microps leucotis</i>)	Category 2	Maintain to slight increase	Maintain to slight increase	Maintain to slight increase	Maintain to slight increase

Increase = Increase in area or numbers
 Maintain = Maintain area or numbers
 Decrease = Decrease in area or numbers

TABLE IV-2 (CONTINUED)
QUALITATIVE IMPACTS OF ALTERNATIVES
TO FEDERALLY-LISTED AND CANDIDATE SPECIAL STATUS SPECIES

PLANTS

Species	Status	Alternative			
		1	2	3	4
Siler Pincushion Cactus <i>Pediocactus sileri</i>	Endangered	Slight Increase	Increase	Increase	Slight Increase
Brady Pincushion Cactus <i>Pediocactus bradyi</i>	Endangered	Maintain to slight decrease	Increase	Significant increase	Maintain to slight decrease
Fick Cactus <i>Pediocactus peeblesianus</i> var. <i>fickeiseniae</i>	Category 1 (proposed for listing)	Maintain to slight decrease	Increase	Increase	Maintain to slight decrease
Bristly Plains Cactus <i>Pediocactus paradigmii</i>	Category 1 (proposed for listing)	Maintain	Maintain	Maintain	Maintain
Desert Rose <i>Rosa stellata</i>	Category 2	Maintain	Increase	Increase	Maintain
<i>Camissonia exilis</i>	Category 2	Unknown	Unknown	Unknown	Unknown
<i>Coryphantha missouri</i> var. <i>marstoni</i>	Category 2	Maintain	Increase	Increase	Maintain ensis
<i>Astragalus ampullarius</i>	Category 2	Unknown	Unknown	Unknown	Unknown
<i>Opuntia whipplei</i> var. <i>multigeniculata</i>	Category 2	Increase	Increase	Increase	Increase
<i>Psoralea epipsila</i>	Category 2	Unknown	Unknown	Unknown	Unknown
<i>Phacelia cephalotes</i>	Category 2	Increase	Increase	Increase	Increase
<i>Penstemon distans</i>	Category 2	Maintain	Increase	Increase	Maintain
<i>Astragalus holmgreniorum</i>	Category 2	Maintain	Maintain	Maintain	Maintain
<i>Cirsium virginensis</i>	Category 2	Maintain	Increase	Increase	Maintain
<i>Astragalus geyeri</i> var. <i>trigetetrus</i>	Category 2	Unknown	Unknown	Unknown	Unknown

Increase = Increase in area or number
 Maintain = Maintain area or numbers
 Decrease = decrease in area or number

At Marble Canyon, people are attracted to the overlooks on the Colorado River rim. As they drive OHVs along the rim, Brady cactus could be impacted and its habitat deteriorated. Prospectors (casual use) have also driven the rim looking for evidence of mineralization, having a harmful impact to the cactus. Over the life of the RMP, the increase in OHV activity could reach a point where the population of Brady and Fick cactus would decline in area and number of plants and the habitat deteriorated.

Existing OHV designations identify OHV travel to be limited to designated roads and trails in some but not all of the desert habitats occupied by the desert tortoise. This limits potential OHV damage to desert tortoise and its habitat. Adverse impacts from OHVs do occur near Littlefield, Beaver Dam and Mesquite.

FROM WILDLIFE

Wildlife management activities could contribute to the proliferation of natural predators within any special status species habitat.

CONCLUSION

The bureau is responsible to insure that all land use activities on public lands do not jeopardize the continued existence of any threatened or endangered species as required by the Endangered Species Act. This requirement and its enforcement would result in no significant impacts to cacti and other listed or proposed listed species from activities such as casual use prospecting and OHV use. BLM policy also requires that all other special status species (those not listed or proposed listed) are also protected as if they were actually listed.

Transfer of lands out of federal ownership near Littlefield/Beaver Dam would only be approved if the net affect is positive or neutral and not jeopardize tortoise recovery.

Acquisitions of land by exchange could be a long term positive impact to special status species.

IMPACTS TO RIPARIAN AREAS

FROM LANDS

A very small part of the 129,000 acres of exchange of state land to the BLM would have riparian habitat along the Virgin River. Some of the exchanges would involve acquisition of springs and their riparian areas. This would result in a long term positive impact as the land would come under federal riparian management.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Of the priority riparian areas identified in Table IV-3, only areas in designated wilderness are fully protected from impacts from mineral exploration and development. In addition, the Virgin River is protected from the Utah/Arizona boundary to the mouth of the gorge by wilderness designation and the Virgin River scenic withdrawal.

The remainder of riparian habitats not in wilderness are subject to locatable mineral resource exploration and development. Due to the limited extent and sensitive nature of the riparian area, any disturbance would be detrimental to the short and long term condition of the area. With the exception of the Virgin River, none of these areas lie within environments favorable for the occurrence of locatable mineral resources which could be extracted or developed in the immediate vicinity of riparian areas. In the case of the Virgin River, gold mineralization as reported would not lend itself to conventional gravity separation methods as the gold is reportedly too fine. Industry interest has thus far been centered around chemical extraction techniques that would not require free flowing water in riparian areas. Any development proposed, therefore, is not expected to impact these riparian areas.

Riparian areas are not expected to be impacted by oil and gas exploration and development due to discretion allowed in leasing, stipulations for mitigation, and the probability of activities targeting in the small riparian areas.

FROM OHVS

OHV activity along the Virgin River riparian area is heavy in the Virgin River-Beaver Dam Creek confluence. Riparian vegetation has been damaged or killed on an estimated 5-10 acres. The riparian area in the vicinity of and between Mesquite and Littlefield is negatively impacted by OHVs.

TABLE IV-3
PRIORITY RIPARIAN AREAS ON THE ARIZONA STRIP DISTRICT IMPACTS BY ALTERNATIVE

Riparian Area Name and Legal Description	Approximate Size/Length	Alternative			
		1	2	3	4
Virgin River T41N R12/13/14W T40N R15/16W	29 miles	Slight decrease	Slight improve	Improve	Slight decrease
Beaver Dam Wash T40N R15W S4 E1/2NW1/4 NE1/4SW1/4	50 acres	Decrease	Slight improve	Improve	Decrease
Paria River T41N R6/7E	24.7 miles	Improve	Improve	Improve	Improve
Kanab Creek T38/39N R3W	12.5 miles	Maintain to slight improve	Maintain to slight improve	Maintain to slight improve	Maintain to slight improve
Bull Rush Wash T39N R4W S4,6,7,8,9, 16,17,18 & T40N R4W S31	9 miles	Improve	Improve	Improve	Improve
Sullivan Spring T39N R14W S10 NW1/4	2.5 acres	Maintain	Maintain	Maintain	Maintain
Gates-Mullen Spring T39N R14W S3 NW1/4	5.0 acres	Maintain	Maintain	Maintain	Maintain
Buckhorn Spring T34N R16W S26 SE1/4NE1/4	2.0 acres	Improve	Improve	Improve	Improve
Grapevine Spring T34N R16W S26 NE1/4NE1/4	2.0 acres	Improve	Improve	Improve	Improve
Whiskey Spring T34N R16W S26 SE1/4SW1/4	3.0 acres	Maintain	Maintain	Maintain	Maintain
Little Arizona Spring T34N R16W S24 NW1/4NW1/4	2.0 acres	Improve	Improve	Improve	Improve
Cottonwood Spring T42N R6W S34 SE1/4SE1/4	4.0 acres	Maintain	Maintain	Maintain	Maintain
Wrather Spring T41N R6E S8 SW1/4SW1/4	2.0 acres	Maintain	Maintain	Maintain	Maintain
Badger Creek Spring T40N R6E S12 NE1/4NW1/4	2.0 acres	Maintain	Maintain	Maintain	Maintain
Red Rock Spring T36N R16W S5 SE1/4NE1/4	.5 acres	Maintain	Maintain	Maintain	Maintain
Middle Spring T36N R16W S7 NE1/4SE1/4	2.0 acres	Maintain	Maintain	Maintain	Maintain
Cane Spring T38N R14W S34 NE1/4	5 acres	Maintain	Maintain	Maintain	Maintain
Pocum Wash T38N R14W S14/24	3.0 mile	Improve	Improve	Improve	Improve

FROM RIPARIAN

Under Alternative 1, the riparian areas would be managed under existing HMPs, AMPs, and BLM riparian policy. Springs and their riparian areas would continue to improve as the riparian plant communities are fenced and protected from adverse impacts such as livestock, OHV, and recreation use. However, fences may be breached allowing occasional negative impacts to riparian areas.

The Paria River riparian area would continue to improve under wilderness protection and rest-rotation grazing. The Kanab Creek riparian area would show slight improvement.

The Virgin River from the gorge to Mesquite would show a slight decrease as OHV activity and livestock use along the river would constrain riparian area improvement.

Fenced springs and riparian areas managed under grazing management systems allowing rest or deferment would maintain or improve. Riparian areas that continue under yearlong grazing use would be negatively impacted.

CONCLUSION

Overall, riparian areas either under grazing management, which allows rest and/or deferment, or fenced from grazing use would show improvement. Areas subjected to yearlong grazing use would continue to be negatively impacted. Areas subjected to OHV use along the Virgin River would not improve. Impacts from mineral exploration and development and leasable minerals would be avoided or mitigated by stipulations.

IMPACTS TO FOREST/WOODLAND RESOURCES

FROM FOREST AND WOODLAND MANAGEMENT

The present management of primarily fire control should, in time, result in an old growth pine forest. No thinning or timber harvest would also encourage an even growth timber stand. These practices would make the forest less productive than its potential and could result in a greater chance for disease and insect infestation.

The pinyon-juniper (PJ) woodlands would continue to provide green, as well as, dead and down fuelwood.

This could involve up to 21,780 acres during the life of the plan. The impact to woodlands would be positive as this would open closed stands. Cutting would create openings allowing stagnated young trees to grow. This also allows such plants as bitterbrush, cliffrose, and several perennial grasses and forbs to increase production.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Locatable mineral exploration and development operations within a particular project area are small and would have a very low adverse impact on harvest of woodland products. Surface disturbance resulting from exploration and development for mineral resources contained within breccia pipes typically disturb up to 20 acres at each mine site. While the ponderosa pine areas shown on Map III-14 lie within an area identified as having a high favorability for the occurrence of locatable mineral resources contained within breccia pipes, no development in these areas is expected over the life of the plan due to exploration difficulties associated with volcanic cover of the areas. Although some exploration is expected, impacts would be very localized and insignificant to ponderosa forests.

Oil and gas exploration and development operations result in relatively small disturbances. Exploration operations typically disturb 8 acres at each site. Approximately 65 acres are expected to be disturbed district-wide from this activity over the life of the plan. Should production be established, approximately 350 acres would be disturbed in an area 3,500 acres in size. Ponderosa pine areas (Map III-14) lie within an area identified as having low potential for the occurrence of oil and gas resources and no development or production activities are expected to occur. Exploration could take place in this area but impacts would be confined to a small area and disturbances would be reclaimed following cessation of operations.

CONCLUSION

Fire control would be the primary management practice under this alternative. Stands would continue to get older and be more vulnerable to disease and fire.

Woodlands subject to fuelwood/post harvest would be positively impacted by opening stagnated PJ stands, allowing herbaceous vegetation and young trees to grow in open sunlight.

Impacts from mineral exploration and development would be very low.

IMPACTS TO GRAZING MANAGEMENT

FROM LAND OWNERSHIP ADJUSTMENTS

Transfer of up to 2,800 acres near the Littlefield area would negatively impact forage availability for livestock grazing. A corresponding loss of grazing fee revenue would create a reduction in available range-betterment funds. These impacts could be mitigated through exchange rather than sales.

Under this alternative 129,000 acres of state land would be added to the public land base of the Arizona Strip. In exchange, the state would acquire public lands in Navajo and Apache Counties of the Phoenix District. This action would result in a consolidation of grazing land administration. At the current grazing fee of \$1.86/AUM, revenue could be increased by \$12,000 per year. Range betterment funds would increase by \$6,000/year. Management efficiency could be increased by eliminating the need to coordinate with the state on grazing matters. Livestock permittees would conduct business with only one agency where presently two are required.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Livestock operations may receive positive or negative impacts from mineral resource development or exploration activities. The temporary loss of 750 acres of available grazing land is considered insignificant. Reclamation is designed to restore long term productivity, so there are no long term impacts to forage production. In some areas, exploration and mining activities have resulted in availability of additional waters which can enhance livestock grazing through better dispersement of livestock into under-utilized areas. There is a potential for mining activities to adversely effect some springs or existing wells by breaching or draining alluvial aquifers, on which an operation may depend.

Upgraded access has provided benefits to some livestock operations by providing all weather access.

Throughout the life of the plan, approximately 1,355 acres of additional grazing lands would be temporarily disturbed as a result of locatable exploration and development activities. Reclamation of these disturbed areas is designed to return them to their original levels of production, therefore, no long term or significant impacts are anticipated.

Current management practices would allow oil and gas exploration/development to temporarily remove approximately 424 acres of forage-producing lands from grazing. Such impacts are considered temporary because of mandatory reclamation requirements designed to return the area back to its original productivity levels.

FROM SPECIAL STATUS SPECIES

Special status species policy and implementation of the Rangewide Desert Tortoise Plan and recovery plans for peregrine falcon, woundfin minnow, Brady and Siler pincushion cactus could place constraints on new range improvements, season of use, utilization levels, stocking rates and livestock management, including limiting, precluding, or deferring livestock use. This could impose long term negative impacts upon the livestock grazing permittee.

FROM MANAGEMENT OF SALINE SOIL AREAS

Present grazing management direction for these areas specify that vegetative use levels prevent a downward trend in erosion class. Positive benefits are realized from such direction based on sustained yield versus short term usage. Dispersed grazing reduces impacts to these areas. Concentrated use has caused damage by disturbance of cryptogams around livestock waters.

CONCLUSION

Land transfers could negatively impact rangeland resources through loss of grazing areas and cause a reduction in range betterment funds.

Benefits through acquisition of 129,000 acres of state land are increased revenue from grazing fee receipts. Approximately \$12,000 could be expected, \$6,000 of which would be available for range betterment. Management efficiency should increase since permittees would conduct business with one agency instead of two.

Management of special status species could adversely impact livestock grazing use.



IMPACTS TO WILDLIFE RESOURCES

FROM LANDS

Land ownership adjustments are not expected to have a significant impact on wildlife resource values. Adjustments may be beneficial if acquired lands have better wildlife habitat than lands sold or exchanged.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Locatable mineral operations exceeding casual use in areas not closed to OHV use require the submission of either a notice or plan of operation. In areas closed to OHV use, an approved plan of operation is required for any activity proposing to use motorized vehicles as a means of access. Through review of a plan of operation, impacts to wildlife species are analyzed in an environmental assessment. Impacts to various wildlife species from mineral operations can range from minor disturbance to displacement for the duration of the activity. The projected 1,355 acres of disturbance from locatable mineral resource exploration and development would not have a significant impact on wildlife. Impacts are usually minor, but could be locally significant with intense activity during periods of reproduction. Loss of habitat is usually minor and mitigated through reclamation.

Geophysical operations used in the exploration for oil and gas are very short term. Impacts associated with this type of activity can, however, be adverse to wildlife species residing in the area, particularly if the activity occurs during sensitive breeding periods. Bighorn sheep are a species that may be particularly effected by this type of activity. However, most of the bighorn sheep habitat is located in wilderness areas and is not subject to this type of impact.

In the case of oil and gas drilling and production, a longer period of time is normally required. Drilling operations typically take up to 4 months. Production operations can last for many years. This intense activity could cause dislocation of wildlife in the immediate vicinity of operations for the duration of operations. This is particularly adverse during critical reproductive periods. If exploration is intense, loss of habitat through cumulative surface disturbances can become significant. Even though both short and long term impacts to wildlife habitat could occur as a result of oil and gas exploration and development, long term impacts would be mitigated through reclamation and seasonal restrictions.

FROM SPECIAL STATUS SPECIES

Current management for special status animals could impose restrictions or adversely impact the development of other wildlife proposals. An adverse impact to the accomplishment of overall wildlife objectives could result from protective stipulations imposed for protection of peregrine falcons, woundfin minnows, desert tortoise or other special status species.

FROM OHVS

OHV designations in the Shivwits Resource Area reduce potential negative impacts to wildlife habitats. No designations exist for lands within the Vermillion Resource Area. Where OHVs are not controlled, adverse impacts to certain wildlife habitats through surface disturbance, noise, and increased human activity occurs.

FROM LIVESTOCK GRAZING

Impacts of livestock grazing on wildlife are addressed in the Vermillion and Shivwits grazing EIS (1979 and 1980). Bighorn sheep would be in jeopardy if cattle allotments adjacent to bighorn sheep range are converted to domestic sheep and/or goats. This could be a highly detrimental impact to bighorn sheep due to disease.

CONCLUSIONS

Under Alternative 1 adverse impacts on wildlife habitat resources would not be significant from land disposals.

Mineral lease exploration and development could impose negative impacts upon wildlife resources, depending on intensity and timing. Many of these are temporary in nature and procedures are in place to assure mitigation is accomplished.

OHV designations in the Shivwits Resource Area prevent many negative impacts on wildlife habitat values. The effect of no designation in the Vermillion Resource Area upon wildlife habitat is not known.

Livestock grazing is generally compatible with wildlife objectives except any conversion of cattle to domestic sheep within desert bighorn sheep habitats would have significant adverse impacts.

IMPACTS TO RECREATION RESOURCES

FROM LANDS

- Land Ownership Adjustments

Implementation of Alternative 1 could result in the exchange or sale of approximately 2,800 acres of public lands. These actions would remove those acres from multiple use and, therefore, any recreational opportunities and experiences once available on those acres such as OHV use. Recreationists would have to seek those opportunities elsewhere, causing minor increases in recreational uses of other areas. As a result, these impacts are expected to be only moderately negative for those users forced to seek opportunities elsewhere. As users disperse to utilize other areas, low to moderate impacts could occur to these resource settings from increased use.

Implementation of Alternative 1 would result in acquisition of 129,000 acres of state lands and an indeterminate number of acres from willing private land owners (if shown to be in the public interest). Once acquired these lands would be subject to BLM jurisdiction and therefore multiple use.

Overall, the variety of recreational opportunities described in Table III-20 and activities described in Table III-22 are expected to be enhanced through better management, more consistent direction, and increased regulation and control of natural settings. As a result, impacts are expected to be moderately positive for both the recreational resource and its users.

- Airports

Implementation of Alternative 1 would result in processing of airport grant or lease requests as they are received. During the life of this RMP, it is reasonable to assume that a very limited number of such requests would be received. Depending on the type of request (lease or grant), such actions may or may not result in removal of lands from public ownership and therefore multiple use. Any removal of lands from public ownership could then encumber or eliminate opportunities for the public to engage in the variety of recreation activities described in Table III-22.

New facility construction would have short term minor adverse impacts on the recreational opportunities

dependant on remote, natural settings. Such impacts are expected to be limited to the vicinity and surrounding area of the proposals. Intermittent, aircraft landings and takeoffs are expected to create acoustical impacts which would affect larger areas and have moderate negative impacts on visitor perception in those areas affected.

Proper analysis of these requests could enhance the site selection process and reduce or eliminate adverse impacts to recreational users expecting less developed settings in which to recreate.

- Communication Sites

Alternative 1 would result in designation of the existing BLM communication facilities on Black Rock Mountain as a designated communication site. Further expansion of these facilities for other than administrative purposes could further impact the visual resources in the area.

Impacts to visitor perception are moderately negative because the opportunity to experience a natural setting in this area is lessened as a result of the location of these facilities. These negative impacts dissipate quickly as the visitor moves away from the facility area.

- Withdrawals

Implementation of Alternative 1 would result in revocation of 16,000 acres of the Virgin River Scenic Withdrawal. This revocation would have no impact to the recreational resource or associated wilderness recreational opportunities as the area proposed for revocation is now under wilderness designation.

Alternative 1 would also result in revocation of 4,863 additional acres associated with two withdrawals which have segregated these areas from all forms of land use appropriation and entry. These areas would be subject to multiple use. There would be low to moderate potential for impact from surface-disturbing activities which may compromise current recreational settings.

- Rights-of-Way

Alternative 1 would result in the processing of rights-of-way applications on a case-by-case basis, with no specific width requirements. This action could have moderately negative impacts to recreation settings. Users expecting undisturbed landscapes could be negatively impacted as a result of contrasts in the natural setting.

FROM CULTURAL RESOURCES

Implementation of Alternative 1 could result in designation of 38,000 acres on the Paria Plateau as an interpretive area. This designation would greatly enhance opportunities to enjoy natural settings and view historic and prehistoric cultural resources on the plateau by providing interpretive facilities, visitor centers, and tours.

Proper planning and administration of the interpretive area could eliminate or reduce any adverse impacts to the recreational settings and associated experiences resulting from interpretive site development, such as increased access or facilities development. Site-specific mitigation would follow NEPA guidelines during any developmental phases.

FROM WILDLIFE

Implementation of Alternative 1 would result in continued wildlife management in accordance with the six existing HMPs. These plans place emphasis on priority species and their habitats which provide the greatest recreational and aesthetic returns including both consumptive and non-consumptive use desert bighorn sheep, mule deer and pronghorn antelope.

Resulting impacts of present management could enhance the recreational resource by increasing hunting and viewing opportunities for the user. The one exception to this may be mule deer hunting since numbers have declined under present management.

Individual improvements such as water catchments may be constructed. Various mitigation measures are available to reduce but not eliminate adverse impacts to recreational resource settings which may occur as a result of construction of wildlife developments.

FROM RIPARIAN

Under Alternative 1, protecting riparian areas according to existing laws, regulations, and policies would generally be beneficial to recreation resources by maintaining or improving the unique recreation opportunities related to riparian areas such as nature study and hiking.

FROM WOODLANDS

Fuelwood cutting on 21,780 acres could compromise recreation opportunities for non-woodcutting visitors seeking outdoor experiences such as hiking or

camping in semi-primitive settings. However, this would only impact a small amount of the lands having semi-primitive settings. Allowing fuelwood and Christmas tree cutting would continue to provide good opportunities to those who enjoy these uses as recreational pursuits. The practice of cutting dead and down wood over the entire district could cause local disturbance to recreation.

Standard operating procedures (e.g. issuing permits, signing, and monitoring) would contribute to the preservation of semi-primitive and roaded natural (RN) settings not designated for woodland product use.

FROM FORESTRY

While the Vermillion MFP provides for ponderosa pine harvest, under present management harvest operations would not be carried out on the district, allowing recreation settings to remain as they are. In several areas, this would allow forest conditions to remain stagnant with ecological diversification held to a stand still. In these types of areas, recreation opportunities such as camping or hunting are somewhat limited due to a lack of diversity in the physical resource upon which opportunities are dependent.

FROM TRANSPORTATION

Implementation of Alternative 1 would result in continued road maintenance and construction necessary to support resource management programs. During the life of the plan, it is not anticipated that new road construction would proliferate to any great degree. Impacts to vehicle sightseeing opportunities would be moderately beneficial as these users would continue to access remote portions of the district.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Since 1980, locatable mineral exploration and development activities have resulted in 750 acres of surface disturbance. An additional 1,355 acres are projected to be disturbed during the life of this plan.

Exploration activities would have minor adverse impacts to recreation settings and associated opportunities for backcountry activities through temporary access construction, drilling operations and certain reclamation operations. Given the generally dispersed nature of drilling activities and the limited duration of each activity, overall impacts to recreation settings are considered minor.

Mining operations would have moderate adverse impacts to recreational settings and to some backcountry recreational opportunities such as hiking, camping, or viewing natural landscapes. Of the above 1,355 acres, approximately 240 acres would be disturbed by the actual mining operations. In the immediate vicinity of the mine site, backcountry recreational opportunities are degraded by construction, operation and ancillary operations such as hauling or powerlines. Reasonable reclamation of mining and exploration activities is required after operations have been completed. Such facilities contribute to the negative perceptions of recreationists seeking more primitive recreation experiences that rely on remote settings. On the other hand, temporary haul road development or upgrading may facilitate other forms of recreation that do not rely on remoteness such as OHV use or driving for pleasure. The degree to which the projected mining or exploration impacts would affect the opportunities for primitive recreational experiences which rely on remoteness is unforeseeable. Throughout the life of the plan it is reasonable to assume that only a limited number or small percentage of the total projected activities would occur in the most remote areas of the district. Many of these activities, however, are occurring in the vicinity of the Mt. Trumbull road and the Kanab plateau, an important recreation area associated with Toroweap overlook in GCNP. Under Alternative 1, remote or sensitive areas, which could be impacted by mining or exploration, would not be subject to special stipulations or increased management focus.

Under current management practices, oil and gas activities have caused some short term impacts to recreational settings and backcountry opportunities by causing surface and vegetative degradation through access construction, drilling activities and other associated activities. These impacts have resulted from approximately 43 oil and gas wells that have been drilled since 1909. These impacts are all, however, short term.

Limited active exploration occurs east of Fredonia in an area that is not considered to provide high value backcountry recreational opportunities. Impacts to OHV use or hunting from oil and gas activities to date have been minor. However, under current management practices the potential exists for recreational opportunities for backcountry activities such as hiking, camping, or viewing natural landscapes in higher value recreation areas to be severely degraded during oil and gas exploration or development. Current management provides that all oil and gas leases contain only standard stipulations which may not prevent high quality opportunities for these recreation activities from being degraded.

Throughout the life of this plan, approximately 415 acres of disturbance from oil and gas activities could occur. Most of the sensitive recreation areas occur in areas of low potential for the occurrence of oil and gas. Assuming that some disturbance occurs in more sensitive recreation settings, moderate to high adverse impacts to backcountry activities could be anticipated.

FROM RECREATION

Present recreation management would continue to accommodate the relatively unregulated and dispersed recreational use that takes place on the majority of the district. Current recreation management is broad and general, it does not focus on the amount or type of visitor use, visitor use patterns, experience opportunities or visitor needs. In the long run, such management could fail to be responsive to change, resulting in adverse impacts to the variety of visitor experience opportunities described in Table III-20, the various types of activities described in Table III-22, and to the settings on which these opportunities and activities are dependent.

Present management and operation of the Virgin River Campground would continue to provide good outdoor recreation opportunities for camping, picnicking, and viewing scenery in a rural setting. However, the campground would continue to be underutilized due in part to design and length-of-stay restrictions. Present management of the Dominguez-Escalante Interpretive Site would continue to provide scenic/informational opportunities.

The Vermillion Cliffs Natural Area would continue to provide important protection to the area north of U.S. Highway 89a in House Rock Valley. The rural, natural setting of the area would be maintained, providing thousands of travelers along the proposed scenic byway each year with outstanding opportunities to view spectacular scenery that is not noticeably affected by human use.

FROM OHV

Present management of the existing OHV designations in the Shivwits and Vermillion Resource Areas would continue to maintain opportunities for visitors seeking nonmotorized, semi-primitive experiences on 270,500 acres closed to OHV use. The remaining land is either limited to existing roads and trails (1,238,500 acres), limited to designated roads and trails (20,400 acres) or undesignated (1,284,600 acres). The designations would continue to contribute to the maintenance of semi-primitive and roaded natural settings by directing OHV use to

roads and trails rather than allowing indiscriminate off-road activity. Such designations contribute to maintaining physical and social settings, which provide the basis for experience opportunities.

Since there are 5,402 miles of roads and four-wheel drive trails in the district, Alternative 1 would not seriously affect the opportunities to enjoy backcountry driving experiences for the majority of OHV visitors.

Currently there are no open areas officially designated in the district. Generally, this would preclude opportunities for off-road activities such as ATV and dune buggy use, however, the majority of the Vermillion Resource Area is undesignated, which in reality makes it "de facto" open. If selected, Alternative 1 would essentially designate these previously undesignated lands as open, which would be highly beneficial to OHV enthusiasts, but highly detrimental to those interested in preserving and enjoying natural, undisturbed landscapes. Present management does not address the need to provide areas for ATV and dune buggy use where there is currently a demand, such as Fredonia.

FROM VISUAL RESOURCES

Under Alternative 1, visual resource management (VRM) would continue to rely on the VRM inventory map (Map II-27) for guidance as to visual class assignments in given areas. Each class (I through V) carries with it an objective statement used to guide design and development of projects at the project planning and EA level. Reliance upon the existing inventory map would preclude management the option of assigning more visually protective classes (I and II) to areas now recognized from current trends in visitor use as having scenic value. Over the life of the plan, this could mean a moderate loss of scenic quality with a corresponding decrease in recreational use associated with viewing scenery at these locations.

CONCLUSIONS

In general, land transfers would tend to remove lands from public ownership and therefore the variety of recreational opportunities and activities associated with those lands as described in Table III-20 and Table III-22. This would be a moderately negative impact to recreational users in the immediate area of the transfer. However, the acreages of concern are limited in nature and adverse effect would be localized. Acquisitions would be moderately beneficial to recreation opportunities in general by subjecting acquired lands to the extensive recreation management now practiced on the district.

Revocations of existing withdrawals would generally open small areas to the full spectrum of multiple uses on the district. For the most part there would be only minor impacts to recreation opportunities from revocations. The potential is very small that activities would be proposed that could totally compromise the recreation settings or associated recreation opportunities.

Rights-of-way, leases, and grants show general minor impacts to the recreation settings as a result of surface disturbance.

Under Alternative 1, harvesting of fuelwood on 21,780 acres could adversely affect semi-primitive recreation opportunities by changing the existing physical setting toward the more urban end of the recreation opportunity spectrum. Allowing fuelwood cutting including green wood in some areas, Christmas tree cutting, and dead and down wood gathering for campsite use would benefit visitors who enjoy these activities as part of their recreational experience.

Continued mining/exploration activities would result in temporary, minor adverse impacts to recreation settings in some small areas. As land use changes occur as a result of increased access in certain areas, it would be difficult to maintain the present character of areas now identified as being remote.

By managing solely for "extensive recreation" with little specific guidance, opportunities for visitors to experience a variety of well-managed recreation settings (Appendix 20) could be compromised over time. Generic management would fail to be responsive to changing types or amounts of visitor use, changing visitor patterns and visitor needs. Additionally, backcountry visitor experience opportunities on 1,284,600 acres of the district currently having no formal OHV designations could be moderately impacted due to OHV impacts to physical settings and visitor conflicts resulting from a "hands off" management approach. If selected, Alternative 1 would essentially designate as open these currently undesignated areas in the Vermillion Resource Area, benefiting OHV enthusiasts.

The management of the Virgin River Campground, Dominguez-Escalante Interpretive Site and the Vermillion Cliffs Natural Area would continue to provide recreational, informational, and scenic opportunities in the respective areas.

Impacts to recreation settings and the spectrum of possible activities from Alternative 1 would range from insignificant to slightly beneficial. A benefit to hiking and

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nature study would result from riparian area management while impacts to recreation from the grazing, special status plants, and watershed programs would be insignificant.

Visitor use may decline as the visual resource declines in areas that were identified as class III or IV on the existing VRM inventory map, and have been recognized by public land users as having moderate to low scenic value.

IMPACTS TO VISUAL RESOURCES

FROM LANDS

- Land Ownership Adjustments

Implementation of Alternative 1 could result in 2,800 acres of potential impacts to existing class III VRM areas. Transfers out of federal ownership could result in land development, structures, or surface disturbances which could negatively impact visual quality.

Implementation of Alternative 1 would result in acquisition of 129,000 acres of state lands and private inholdings where shown to be in the public interest. In general, long term positive benefits would accrue as these lands are put into bureau jurisdiction and are managed under VRM guidelines and objectives.

- Airports

Implementation of Alternative 1 would result in processing of airport grants or leases as they are received. Depending upon the location of such requests, there may or may not be acceptable levels of change in the basic VRM elements. Realistically, so few of these requests are expected throughout the life of the plan, overall impacts to visual resources is expected to be insignificant.

- Communication Sites

Implementation of Alternative 1 would result in designation of the existing communications site on Black Rock Mountain. Additional VRM impacts would not occur. Except for the immediate visual contrasts in existing class II area, VRM impacts quickly dissipate as one moves away from the facility and contrasts become subordinate to the existing landscape. Overall, impacts to visual resources are considered low.

- Withdrawals

Implementation of Alternative 1 would result in revocation of 20,863 acres of withdrawals (Table II-1). These acres would be subject to VRM guidance and objectives to reduce visual contrasts to the various landscape elements if any surface disturbing proposals were submitted. Overall, impacts to visual resources are considered low.

- Right-of-Way Corridors

Implementation of this alternative would allow consideration of right-of-way corridors on a case-by-case basis. This alternative could result in adverse impacts to various VRM classes, depending on the type of facilities that would be constructed. The effectiveness of VRM mitigation would be limited if such proposals were dispersed throughout the district.

FROM WILDLIFE

Continued implementation of HMP decisions would impact visual resources as wildlife projects are constructed. Mitigation would be available to eliminate or reduce visual impacts to acceptable limits, except perhaps class I VRM areas. In any case, such impacts would be limited in numbers and spatially confined.

FROM WOODLANDS

Green fuelwood cutting on 21,780 acres would eventually change the existing form, line, color, and texture in the harvest areas due to removal of trees. The visual contrast brought about by such change would impact VRM class III and IV areas. The expected contrasts would not be significant in these classes, where visual change and noticeability are generally more acceptable. However, any such change in class II areas could adversely impact visual resources to a moderate degree. In the Vermillion Resource Area, the continued management of travel influence zones along many primary travel routes would benefit visual resources by ensuring that fuelwood cutting areas remain outside of the corridors identified for these routes. Christmas tree and dead and down wood cutting throughout the pinyon-juniper woodlands of the district exclusive of wilderness would not adversely impact visual resources. Standard operating procedures (e.g. issuing permits, signing and monitoring) would contribute to maintaining visual quality in areas not designated for woodland product use by ensuring compliance on fuelwood cutting in designated areas.

FROM FORESTRY

While the MFPs provide for varying degrees of ponderosa pine harvest, under present management harvest operations in the district probably would not be carried out, allowing visual quality of the landscape to remain intact.

FROM TRANSPORTATION

Implementation of this alternative would result in continued road maintenance and construction necessary to support resource management programs. Low to moderate adverse impacts to visual resources are anticipated from the construction of new roads by affecting the various landscape elements of form, line, texture and color. However, mitigation is available to reduce impacts to within acceptable levels for VRM classes III and IV.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Locatable mineral exploration and development activities have created temporary adverse impacts to the various visual resource management class (classes I-V). These impacts create or cause varying degrees of acceptable or unacceptable visual contrasts depending on the sensitivity levels of VRM class. To date, only two mining activities since 1980 have taken place in class I VRM areas. As a result, in the immediate area of impact, these visual classes have been temporarily degraded to class V VRM areas.

It is reasonable to assume throughout the life of this plan, that at least three or more class I, high sensitivity areas would be temporarily degraded, during mining activities. Short-term impacts from exploration or development may cause temporary levels of visual impacts in higher level scenery classes. Given the mandatory reclamation requirement of this program, however, no significant long-term impacts to visual resources are anticipated.

Material disposal may temporarily or permanently impact VRM classes by causing changes in the various landscape elements of form, line, color or texture. Such impacts are generally confined and site specific. Future proposals would be evaluated using proper site selection processes and screening techniques. Overall impacts to visual resources are expected to be low to moderate.

This alternative could result in low to moderate adverse impacts to visual resources in areas where no

special lease stipulations exist to protect sensitive scenic values from leasable mineral resource related disturbances.

FROM RECREATION

Current recreation management's broad and general approach does not focus on the variety of physical and social settings present in the district. Management of the particular details of the physical setting (i.e. the noticeability of developments and other man-induced change) would not be an important consideration in day-to-day management. Subsequently, visual resources, as a part of each setting, would not receive any greater management attention. Over time, this could adversely impact visual resources due in part to unmanaged visitor use.

The Vermillion Cliffs Natural Area would continue to provide protection to the area north of U.S. Highway 89a (proposed scenic byway) in House Rock Valley since any development in the area must not be noticeable.

FROM OHV

Existing OHV designations in the Shivwits and Vermillion Resource Areas would continue to provide some protection to visual quality on 270,500 acres closed to OHV use. The remaining land is either limited to existing roads and trails (1,238,500 acres), limited to designated roads and trails (20,400 acres) or undesignated (1,284,600 acres). The designations contribute to the protection of visual quality by directing OHV use to roads and trails rather than allowing indiscriminate off-road activity. Such designations contribute to the protection of visual resources by eliminating OHV use in off-road areas as one possible source of visual contrast.

Undesignated lands would be classed as open if Alternative 1 were selected; allowing indiscriminate off-road activity. Visual quality on public lands in these areas could be highly impacted by such use. The potential for impacts to visual resources could increase to moderate levels near communities with the de facto designation of these open areas.

FROM VRM

Visual resource management would continue to rely on the VRM inventory map for guidance on visual class assignments in given areas. Management would not have the option of assigning more visually protective classes (I and II) to areas where visitor use suggests

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greater scenic value and visitor sensitivity. Over the life of the plan, this could mean a moderate loss of visual quality in some locations, since class III and IV (moderate to low scenic value) area objectives allow substantial change to form, line, color and texture.

CONCLUSIONS

In general, lands transferred out of federal ownership, leases and grants could have minor to moderate adverse impacts to visual resources in the immediate area. Such actions may or may not be compatible with the visual objectives of that visual class and the sensitivities involved. Such impacts would generally be local in nature and should involve contrasts only associated with agricultural development (color, line and texture). Acquisitions would contribute to the long term benefit of visual resources.

Communication sites and withdrawal revocations would have only insignificant or minor adverse impacts to the visual resources where these few actions are expected to occur. Most of the withdrawal revocations are in class III or IV with moderate to high sensitivities, but are still protected by wilderness designation.

Harvesting of fuelwood on 21,780 acres could adversely affect visual quality by changing, over time, the form, line, color and texture of the existing landscape. The impact would not be significant in VRM class III, IV and V areas, but could be moderate in any class II areas.

Locatable mineral resource exploration and production activities would cause short term adverse impacts to visual resources in a localized area. However, without being able to locate a site on the ground it can not be determined if these impacts will be within acceptable limits of change for the various visual classes involved. Mine haul roads could degrade visual resources. These impacts are generally associated with changing land use patterns as a result of all weather access which attract users into previously remote areas and include such activities as off road travel, wood cutting and vandalism.

The absence of management focus on recreation settings could contribute to a slow deterioration of visual quality. In addition, the combination of no OHV open area designations in the district and no designations at all in portions of the Vermillion Resource Area would continue to allow the possibility of indiscriminate off-road activity, which could also add to a deterioration of visual resources. Existing OHV designations would continue to benefit visual resources by not allowing indiscriminate off-road activities that could deteriorate the landscape.

Visual quality may decline in areas identified as class III or IV on the existing VRM inventory map, which have been recognized by public land users as having moderate to low scenic value.

The continued management of travel influence zones and the Vermillion Cliffs Natural Area would benefit visual resources by restricting fuelwood cutting in the former and constraining structural development in the latter.

IMPACTS TO WILDERNESS

FROM LANDS

- Communication Sites

Alternative 1 would result in designation of the existing BLM communication facilities on Black Rock Mountain as a designated communication site. Further expansion of these facilities for other than administrative purposes would not be allowed.

The Black Rock communication site is located adjacent to the Paiute Wilderness Area. Opportunities for wilderness experiences free of man's impacts is non-existent where these facilities can be viewed from within wilderness. As such, impacts are highly negative to the wilderness user.

- Withdrawals

Implementation of Alternative 1 would result in revocation of 16,000 acres of the Virgin River Scenic Withdrawal. This revocation would have no impact to the recreational resource or associated wilderness recreational opportunities as the area proposed for revocation is now under Paiute/Beaver Dam Wilderness designation.

CONCLUSIONS

The Black Rock communication site could provide adverse impacts to Paiute-Beaver Dam Wilderness. The revocation of the Virgin River Scenic Withdrawal would not impact wilderness due to the overlap of the withdrawal and wilderness.

IMPACTS TO TRANSPORTATION/ACCESS

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Currently there are a total of 5,402 miles of roads and 4-wheel drive trails within the district. Since 1980, approximately 140 miles of new access have been made in conjunction with locatable mineral resource exploration. In addition, 32 miles of road have been upgraded and 4 miles constructed for mine development (Map III-8). The majority of this has been done in conjunction with exploration and development of minerals contained within breccia pipes.

All 176 miles of the existing mining-related access would be reclaimed by the company or claimant responsible for the disturbance once exploration or development is complete. These roads are all relatively short, narrow spur roads originating from existing roads. Impacts to transportation and access from these roads are minor and short term. Road upgrades and new construction associated with mine development have a greater impact to transportation and access as these roads are wider and provide all weather access to areas.

Over the life of the plan, temporary access associated with exploration could result in approximately 255 miles of additional road. Approximately 60 additional miles of road could be upgraded and 7 miles of new road could be constructed in association with mine development.

New access not needed for public purposes and BLM programs would be fully reclaimed once mining has ceased. In some cases upgraded roads are required to be restored to their previously existing condition. Roads upgraded or constructed in conjunction with mine development would be used for approximately ten years for each mine site.

No new permanent roads have been built in association with oil and gas exploration activity on the district. Though some 43 exploration wells have been drilled in the area, all pads and roads to them have or will be reclaimed following cessation of exploration activities. Approximately 415 acres of disturbance are projected from oil and gas exploration and development in the district over the life of the plan. This acreage figure includes new temporary access. Approximately one mile of new road is projected for each well location. For the 52 exploration and production wells which may be drilled

over the life of the plan, approximately 52 miles of new temporary access road would be required. These roads would be reclaimed, however, following completion of operations on the well pad and would, therefore, have no significant effect on transportation or access.

CONCLUSION

Mineral exploration and development improves access to public land on a short term basis. It provides the district with an opportunity to take over new or improved roads when no longer needed by the mining company or to require reclamation. These roads could provide improved access to the public and other users of the public lands.

IMPACTS TO SOCIO-ECONOMIC RESOURCES

FROM LAND DISPOSALS

Land disposals under Alternative 1 could result in a transfer of 2,800 acres of public lands out of federal ownership. Most of these lands are in the Littlefield/Beaver Dam area and would be used for community expansion or residential development. Community expansion needs near Colorado City and Fredonia would not be entirely met. If lands were sold rather than exchanged, the sale of lands would be a positive economic impact by increasing the county tax bases. The sale would also generate revenue for the federal government.

FROM WITHDRAWALS

Withdrawal revocation would open new land to mineral location and leasing, possibly creating a beneficial economic impact to both the public and federal government.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Continuation of present management would keep most of the district open to mineral location with the exception of the wilderness areas, two scenic withdrawals and the Grand Canyon Game Preserve. Economic impacts from mineral exploration and protection have a positive impact on local economies. It is estimated that uranium mining adds about 50 million dollars a year into these economies and also increases local and state tax bases.

Mining pays the highest weekly earning of any employment sector in the affected counties but accounts for only one to two percent of the local counties' employment.

Mining activities have not resulted in large influxes of 'outsiders'. Using mostly 'locals' for employment has not added stress to the existing sociocultural structure or stress on existing support services such as hospitals, schools and police.

There are approximately 550,000 acres of oil and gas leases districtwide, which produced \$63,209 of revenue to the federal government in 1988. Of this amount, approximately one-half of this revenue is returned to the State of Arizona. The limited exploration has not accounted for any substantial infusion of dollars into the local economy. Production of oil and gas has yet to be realized within the district.

Assuming that oil and gas leasing remains relatively constant throughout the life of the plan, well over \$950,000 of revenue could be realized.

Based on the assumptions and projections presented in Appendix 30, an oil and gas field could be developed. Forty-four wells would be projected. Such a scenario could positively benefit the economy through increased employment and support of local services not associated directly with oil and gas development.

CONCLUSION

Little change from the existing situation is projected. Land disposals could generate an increased tax base.

Mineral exploration and development would continue providing employment and side benefits in the support of local services not associated with mining. Local and state tax bases would be increased slightly.



CUMULATIVE IMPACTS

This section addresses the degree and extent of the cumulative impacts on the physical, biological, and socio-economic environment. Cumulative impacts include the impact on the environment which results from the incremental changes from the various actions when added to other past, present and reasonably foreseeable changes. Cumulative impacts can also result from individually minor, but collectively significant actions taking place over a period of time.

REASONABLY FORESEEABLE IMPACTS (1990-2005)

Reasonably foreseeable impacts are those impacts anticipated to occur if Alternative 1 is chosen as the management strategy. Table III-32 describes the cumulative surface disturbance changes from 1976-1989 and represent the baseline condition existing within the district. Alternative 1 reasonably foreseeable impacts are added to the changes described in Chapter III (cumulative change). To facilitate this analysis, all environmental parameters are grouped into four categories; physical (surface disturbance), biological, remoteness (recreation settings and experience opportunities), and socio-economic.

PHYSICAL COMPONENT

Table IV-4 represents an estimate of past changes (1976-1989) and reasonable foreseeable impacts of each alternative which could occur in the next 15 years depending on which alternative is selected as the management strategy.

Overall, a total of 64,750 acres could undergo some degree of surface impact. The majority (91 percent) of surface disturbance would involve land treatments designed to enhance watershed, wildlife and range conditions, and harvest of woodland products and would only cause short-term temporary change to the surface. Six percent or 4,165 acres of the surface change could result in a permanent commitment of resources. These impacts would be due to land developments and agriculture following transfer to private ownership, roads, range-land improvements, utilities, rights-of-way, leases, recreation facilities, and grants.

Management of the existing watershed, wildlife habitat, and livestock grazing activity plans and woodland products program could result in an estimated 59,050 acres of surface impacts.

TABLE IV-4
CUMULATIVE IMPACTS (1976-2005)
CUMULATIVE CHANGES (1976-1989) AND
REASONABLY FORESEEABLE IMPACTS (1990-2005) TO LAND SURFACE

Programs	Source of Impact	1976	1990 TO 2005			
		To 1989 Acres	ALT 1 Acres	ALT 2 Acres	ALT 3 Acres	ALT 4 Acres
Lands	Development associated with land use authorizations and ownership adjustments	4,800	3,735	2,650	2,625	7,550
Minerals	Exploration and development of locatable, leasable and salable minerals	1,100	1,850	1,850	1,850	1,850
Cultural	Excavations, field schools	5	5	5	5	5
Watershed	Land treatments and associated roads	21,000	12,750	12,750	12,750	12,750
Forestry	Commercial harvest	30	0	0	0	1,000
Woodlands	Fuelwood, posts, poles, Christmas trees	21,350	21,780	21,780	21,780	21,780
Transportation	Black Rock and Quail Hill road upgrades	95	25	25	25	25
Grazing	Rangeland developments, land treatments, roads	18,000	19,200	19,200	19,200	19,200
Wildlife	Wildlife developments, land treatments, roads	1,400	5,320	5,320	5,320	5,320
Recreation	SRPs and camping	80	85	85	85	85
TOTALS		67,860	64,750	63,665	63,640	78,565

Most of the surface impacts result from vegetation type conversion and reseeding to improve watershed condition, wildlife habitat, rangeland condition, and livestock forage. These impacts would be of short duration involving initial disturbance from vehicles, chains, plows, etc. used in accomplishing land treatments or harvesting woodland products. Of the 59,050 acres of surface impacts from these programs, only 320 acres of roads and structural developments are considered permanent.

Management of the lands and minerals programs could result in an estimated 5,585 acres of surface impact. Approximately 3,735 acres are considered long-term and permanent impacts resulting from lands actions (land developments and agriculture following transfer to private ownership, and rights-of-way and leases). Other significant actions in the lands program could include: (1) acquisition of 129,000 acres of State of Arizona land through exchange, (2) transfer of 2,800 acres to private

ownership by sale or exchange, and (3) processing of land use authorizations for rights-of-way, leases, permits, etc., communications sites, and Recreation and Public Purposes Act applications from governmental or non-profit entities for public parks and other public purposes. Changes in the physical environment from these programs would be minor.

Approximately three percent of the total estimated surface impacts (1,850 acres) could be generated from locatable, leasable, and salable mineral activities. Appendix 31 describes the assumptions used to project the 1,355 acres of surface impacts related to locatable minerals. The vast majority would be short-term impacts associated with drill site exploration and temporary overland access. Longer-term but temporary impacts are those associated with development of deposits and necessary ancillary facilities. Haul roads and utilities used in conjunction with more than one development could last considerably longer than ten years, however, mandatory mitigation would include reclamation of nearly all surface disturbances associated with mineral development. Exploration is not anticipated to have significant adverse impacts to surface water. Mining activities could result in minor adverse impacts to surface water and perched aquifers could be dewatered as a result of mining activities. Monitoring is being conducted within Kanab Creek to ensure that mining activities do not impact Kanab Creek or the Colorado River; no significant impacts have occurred to date. Exploration activities would cause minor impacts to air quality. These impacts are caused mostly by vehicle travel which results in fugitive dust. Air and radiological impacts are being monitored at existing mine locations. To date, none of the studies have demonstrated that any of the statutory thresholds for air quality have been surpassed and consequently no significant impacts are anticipated. Adverse noise impacts from exploration and mining activities would be localized and temporary.

Management of the cultural resource, forestry, and recreation programs would result in an estimated 90 acres of surface impact from cultural excavations, field schools, and special recreation permits and dispersed camping activities. The 90 acres are considered short-term surface impacts. This estimate does not include recreational OHV disturbance related to use of ATVs, motorcycles, etc. It is assumed that most of off-road activity is related to other uses such as grazing, mineral exploration, administrative field work, camping and hunting, and are included in the acreage figures for the various programs listed in Table IV-4.

BLM transportation system upgrade on Quail Hill road would disturb 25 acres on 9.5 miles of road. Quail Hill is scheduled for a 1990 completion.

BIOLOGICAL COMPONENT

Actions under the existing MFPs for development and implementation of wildlife habitat, watershed, and livestock grazing management plans would continue (Table II-1). The plans are designed to reach objectives specific to the plan area and involve rangeland improvements for wildlife habitat, watershed, and livestock grazing and management actions to maintain or improve rangeland conditions.

Approximately 36,900 acres (58 percent of the total surface impacts) of homogeneous and less productive stands of sagebrush or pinyon-juniper with poor understory vegetation conditions could be chained, plowed, burned, or treated with herbicides and seeded. This would be done to reduce erosion and sedimentation, enhance vegetative cover, improve rangeland conditions, wildlife habitat and livestock forage. The end result would be an increase in biological diversity on-site by creating change in a stagnant or undesirable plant community. Short term impacts to wildlife species would occur throughout the disturbance phase. Mobile wildlife would be temporarily displaced, but quickly returned to the changed and improved habitat. The reseeded areas create more diverse vegetative communities than previously existed and would generally be utilized by a wider variety of species than were present prior to treatment. Vegetative diversity resulting from land treatments would be enhanced through use of a variety of seed mixtures that benefit wildlife and livestock and improve watershed conditions.

The harvest of woodland products on 21,780 acres (34 percent of the total surface impacts) would create temporary surface changes, mostly in the form of overland vehicle travel and removal of selected overstory trees. This disturbs vegetation and temporarily displaces wildlife. Where woodland harvest activities are concentrated in specific areas, the impacts are similar to land treatments in that overstory is removed, allowing for a more productive understory. Some negative impacts to wildlife species have occurred in areas where small roads are created to facilitate harvesting of woodland products. There would be no commercial harvest of timber.

Locatable, leasable, and salable minerals account for temporary impacts to vegetation and wildlife on about 1,850 acres (three percent of the total surface impacts). Wildlife may be displaced near exploration and development sites generally for the duration of operations. Some species such as song bird, bighorn sheep or raptor could acclimate to ongoing disturbances with little consequence other than temporary loss of habitat. Vegetation would be temporarily removed at mineral development sites and

access routes to mineral activities and would represent direct habitat loss to wildlife species. Mandatory mitigation would be required to ensure that all surface disturbance would be reclaimed to reflect prevailing environmental conditions and to ensure that long-term productivity of the area would not be impaired.

Impacts which could cause a long term decrease in biological diversity would be related to lands program actions (land developments and agriculture following transfer to private ownership, and rights-of-way and leases), permanent rangeland improvements, recreation facilities, and BLM transportation system upgrades which eliminate vegetation, wildlife or their interactions. Approximately six percent of the total impacts (4,165 acres) would be considered to be a permanent commitment of resources. Wildlife and vegetation would receive moderate, negative impacts of both temporary and permanent duration. Activities associated with lands program could impact about 3,735 acres of wildlife habitat and vegetation in order to facilitate growth and expansion of local communities or to provide for other services.

Cultural resource and recreation management programs would not significantly impact wildlife or vegetation.

REMOTENESS CONCEPT

Current management of the watershed, grazing, wildlife, and woodland products programs would continue to bring about the greatest change to recreation experience opportunities. Impacts to physical settings created by land treatments, facility development, and associated roads would continue to shift recreation classes from the primitive end of the recreation opportunity spectrum toward the urban end and slowly decreasing the "remote" acreage available on the district. However, the change over time would be less noticeable as vegetative diversity and succession occurs within treated areas.

Mineral exploration and development would impact physical settings with new and upgraded roads and development sites. These activities would generally impact recreation opportunities in semi-primitive nonmotorized and motorized classes by shifting settings toward the urban end of the recreation spectrum. However, these activities could be considered short-term, temporary impacts due to mitigation, which would include almost total rehabilitation of access roads, mine yards, and powerlines. The greatest impacts of mineral exploration and development on "remoteness" could come in the form of temporary changes to the social setting from construction of new and upgraded roads. Improved access (until rehabilitated) could encourage the public to

enter areas they previously avoided due to poor road conditions. Greater numbers of visitors in an area would then shift the social setting toward the urban end of the spectrum.

The gradual increase in the region's population, the increasing amount of leisure time and the improved recreation vehicles would continue to impact remoteness. The more visitors on the district the less likely is the opportunity to experience remoteness. This factor is one of the most important impacts on remoteness.

Growth and development potential in the Littlefield-Beaver Dam area and the Colorado City-Cane Beds area could further impact recreation settings on nearby public lands. Use authorizations and land ownership adjustments could either increase the number of growth-related developments (rights-of-ways, permits, leases, etc.) on public lands or transfer ownership to private or state interests. In either case, recreation settings could shift toward the urban end of the spectrum in these areas.

Ongoing management of the eight designated wilderness areas on the district would continue to preserve semi-primitive and primitive recreation experience opportunities in these areas.

Generally, current management direction would continue to be general concerning "remoteness" rather than focused on experience opportunities, which depend on a variety of settings requiring maintenance or enhancement. Thus, in the long run, such management could fail to be responsive to changing visitor needs or custodial of the settings in which those needs are met.



Grand Wash Wilderness Area.

SOCIO/ECONOMIC COMPONENT

Population is expected to grow at approximately two percent annually over the life of the plan. This would result in approximately 40 percent more people in the communities by the year 2005 than presently exist. The projected community expansion could result in the need to acquire public lands through direct sale, exchange, or R&PP lease/sale. Under current management, 2,800 acres would be available for this expansion. Over the life of the plan, however, approximately 3,470 acres could be needed to accommodate this growth. Thus, under current management, population growth in the existing communities could be significantly restrained through inadequate land availability.

Income:

Even though the district would continue to remain open to natural resource uses in most areas, little change is expected in employment types. Employment opportunities in the manufacturing and mineral resource development fields would not be significantly affected by continuation of present management. Mineral resource development would continue to be determined by the discovery of mineral resources amenable to economic development. While the continuation of existing management would encourage mineral resource development by allowing exploration and production to occur over most of the district with few restrictions, it is not expected to cause a major increase in job opportunities in the mining sector. Construction related job opportunities would be somewhat curtailed as land for potential community expansion would be limited. The remaining job types, including those in the service sector directly associated with tourism, would not be affected by the continuation of current management.

Social Perceptions:

Under current management, natural resource use and development would continue. The balance between natural resource use and development and the preservation or enhancement of naturalness or remoteness would be determined on a case-by-case basis. Users of the land who reside in the vicinity of the district would tend to favor this alternative as fewer restrictions would be imposed concerning resource use and development. On the other hand, users who favor the preservation of remoteness and naturalness would not tend to support this management option as the preservation or enhancement of remoteness and naturalness would not be favored above other aspects of public land management.



IMPACTS OF ALTERNATIVE 2

IMPACTS TO LAND RESOURCES

FROM LANDS

- Ownership Adjustments

Making 17,140 acres of public land available for exchange, sale or R&PP leases or grants would ensure that lands are provided to accommodate community growth. Making more land available for ownership adjustments than under current management, benefiting the local communities to a very high degree. Land exchanges would add lands with higher or more diverse resource values into public ownership.

Acquisition of 157,300 acres of state and private lands and subsurface estate would further consolidate large blocks of public lands. This would generally allow more efficient and consistent management of resources. It would also eliminate the need for public land users to deal with two separate government agencies for the same use.

- Airports

Administering existing airports and providing land to expand the Colorado City airport would serve the local economies. Not providing land in Ferry Swale for an airport would protect the visual and recreational values of the area and avoid noise, visual, and other secondary impacts to the Paria Canyon Wilderness Area, Glen Canyon National Recreation Area lands and the proposed SRMA. This action would also have an adverse social and economic impact on the residents of Page.

- Communication Sites

Further site development of the existing Black Rock Mountain communications facility would not be allowed due to the sensitivity of adjacent scenic lands and the Paiute Wilderness Area. Seegmiller Mountain would be established as the new communications site to which future proponents would be directed. Once developed, the Seegmiller site could enhance local or regional telecommunication capabilities for high power uses (i.e. television, radio, radar, etc.). Seegmiller Mountain does not presently have improved access and may not provide the communication coverage that Black Rock does. It

would be more costly to users to develop and service this site.

Proposals for communications sites elsewhere in the district would continue to be considered on a case-by-case basis, except in the Moccasin Mountains, which would not be open to such use. Case-by-case consideration would benefit other proponents to a high degree if the designated site on Seegmiller Mountain proved inadequate for their needs.

Review of the two Federal Energy Regulatory Commission (FERC) withdrawals in Ferry Swale would have no environmental, social, or economic impacts in itself; however, revocation of the withdrawals and conversion to Title V rights-of-way could have positive benefits by removing segregation orders on these lands and restoring the general land laws. These lands would then be open to a greater variety of uses, resulting in low to moderate beneficial impact for those that have previously been prohibited.

- Right-of-Way Corridors

The preferred alternative would reduce the width of the existing right-of-way corridor in most of the Shivwits Resource Area from two miles to one mile. In desert tortoise habitat, the corridor would be eliminated and individual right-of-way proposals would be analyzed on a case-by-case basis. The corridor in the Vermillion Resource Area would be increased from 2,000 feet to one mile, except in Ferry Swale where it would stay at 2,000 feet. While the corridor, where established, would continue to reduce the possibility of random proliferation of major rights-of-way, the width reduction in the Shivwits Resource Area could constrain the ability of utility companies to plan and place utilities. Similarly, in the Vermillion Resource Area, the increase in corridor width would moderately enhance the ability of utility companies to plan and place major rights-of-way.

The preferred alternative would also designate an additional right-of-way corridor that would provide proponents of major utility facilities an alternative route to the existing corridor. The new Rosy Canyon/Lime Kiln corridor (Map II-4) would be one mile wide except in Rosy Canyon where it would be in the canyon bottom only. A corridor would not be established in desert tortoise habitat. This would benefit the public by providing proponents of major utility facilities a logical alternative for routing facilities that are not compatible with or suitable for placement in the existing corridor.

Encouraging underground placement of smaller, distribution utilities in certain parts of the district would

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adversely impact proponents economically to a high degree except few proposals for such use are expected in the specified areas. Total restriction of permanent distribution facilities in the Gramma and Kanab Canyons, Moccasin Mountains and Marble Canyon areas should not adversely impact proponents because of the expense to cross such areas and the viable alternatives that exist. Few such proposals are expected.

No reasonable alternative exists for the alignment of a corridor outside of desert tortoise habitat in the western portion of the Shivwits Resource Area. Due to the uncertain adverse impacts corridor designation would have on the desert tortoise, corridor routes have not been established in tortoise habitat. All rights-of-way authorized in the habitat of desert tortoise would be required to be routed, constructed and maintained in such a manner that adverse impacts to desert tortoise would not occur. This could result in additional construction and maintenance costs to the right-of-way holder and lead to the proliferation of individual right-of-way routes.

FROM SPECIAL STATUS SPECIES

Designation of special management areas such as ACECs to protect special values are often accompanied by management prescriptions which preclude certain land use authorization requests. Denial or modification of such requests would have adverse economic impacts on the public. Negative impacts would occur primarily in the Beaver Dam/Littlefield area through restrictions required to protect roundtail minnow and desert tortoise habitat. Retention of all essential federal desert tortoise habitat could limit the extent that the Littlefield / Beaver Dam and Mesquite communities could expand. This could be a significant impact based on their current rapid growth rate.

FROM EASEMENT ACQUISITION

Securing easements across private land to gain access to public lands would benefit the general public by making these lands available for public use. This action would also allow the BLM to enter isolated lands for administrative purposes.

FROM SPECIAL DESIGNATIONS

Special designations to protect or enhance resource values may be accompanied by management prescriptions which could preclude certain land use authorization requests, such as rights-of-way or disposals, if incompatible with the purpose of the designation.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

The impacts of mineral development under Alternative 2 are identical to Alternative 1.

CONCLUSIONS

Development of Seegmiller Mountain as a new communication site, should demand arise, imposes a negative requirement to provide access upon the potential applicants. The Seegmiller site is nearer to existing electricity and more attractive to facilities requiring high power for operation.

ACEC designations for special status species could restrict certain land use authorizations within ACECs. Adverse impacts to the user public would also result through the prevention of possible community expansion near Littlefield for the protection of endangered species.

Restrictions on right-of-way construction on the Paria Plateau would adversely impact potential applicants. Longer alternate routes or expensive mitigation may result.

Acquisition of state or private inholdings by BLM could provide benefits to all resource programs and the public. Resource values obtained would be placed under multiple use management and secured for public benefit. Public service and efficiency would also be provided by eliminating one administering agency in the case of state acquisitions.

Designating a one-mile-wide right-of-way corridor across the Arizona Strip would be beneficial by preventing proliferation of rights-of-way, minimizing environmental degradation and facilitating right-of-way processing. Negative impacts would affect right-of-way proponents on areas where no above-ground linear rights-of-way would be granted. Adverse impacts could also result from the lack of designation of a right-of-way corridor through desert tortoise habitat.

Easement acquisition to isolated public lands has positive effects for the general public as well as BLM. Access would be secured for visitors and for BLM administration purposes.

The lands program would benefit from review of the FERC withdrawal in Ferry Swale provided it was found to

be no longer needed. Such a withdrawal is not an appropriate method of allowing rights-of-way on public lands. Authorization should be under Section 501 of FLPMA.

Wilderness, scenic, and recreation values of public lands would be protected from visual, noise and secondary impacts of an airport in Ferry Swale. Local officials would be limited in alternative airport siting opportunities.

IMPACTS TO MINERAL RESOURCES

FROM LANDS

- Ownership Adjustments

Ownership adjustments on 17,170 acres of public land could negatively impact the prospect of mineral development. The majority of the lands that would be disposed of are located in areas identified as having high potential for the occurrence of locatable minerals and moderate potential for oil and gas. Once these lands leave federal ownership and become developed through the building of structures, the likelihood of mineral exploration being conducted on the tracts is minimal. This would be the case even if the minerals were retained in federal ownership. Without the exploration, chances are very small that any mineral resources which may underlie the tract would be developed throughout the life of the plan.

The acquisition of 147,600 acres of state land and 9,700 acres of private land could have a positive effect on the development of mineral resources which may underlie these lands. A significant portion of these lands are located in areas which have a high potential for the occurrence of locatable minerals, such as uranium, and a moderate potential for the occurrence of leasable minerals such as oil and gas. The blocking of land ownership patterns would have positive impacts on mineral exploration and development activities because there would be fewer potential problems between land owners and operators would be subject to only one set of regulations.

- Withdrawal Revocation

Revocation of the Boulder Canyon and Turbinella-Gambel Oak protective withdrawals would have a positive on the development of any leasable or locatable minerals as described in Alternative 1.

From Special Designations

The designation of ACECs would have a negative impact on mineral resource development. These areas are all located in areas determined to have high or moderate potential for the occurrence of locatable minerals. Specifically, Marble Canyon, Witch Pool, Nampaweap, Fort Pierce, Little Black Mountain, Johnson Spring, Moonshine Ridge, and Lost Spring Mountain all lie in areas known to be highly favorable for the occurrence of uranium mineral resources contained in breccia pipes and sandstone bodies. The Beaver Dam and Virgin River ACECs lie in areas of moderate favorability for the occurrence of gold resources. The designation of the ACEC would require the submission of a plan of operation under the 43 CFR 3809 regulations for any activities exceeding casual use. This plan would require the preparation of an environmental assessment prior to its approval and consequently increase cost to the developer due to time delays and environmental studies.

In the cases of Witch Pool, Nampaweap, and Little Black Mountain ACECs, relatively small areas have been included in the ACEC based on the small area of known cultural resource occurrence. Operations which would not adversely impact cultural resources and would not cause unnecessary or undue degradation would be allowed to proceed.

Mineral material disposals would be prohibited within the ACECs. Marble Canyon, Witch Pool, Nampaweap, Fort Pierce, and Little Black Mountain are located in areas of low potential for the occurrence of significant quantities of good quality mineral materials. The designation would, therefore, have little adverse impact to the development of aggregate resources currently being used or of potential use.

In the case of Moonshine Ridge ACEC, significant gravel resources just outside the ACEC boundary are known to occur and are being developed from exposures of the Chinle Formation. Gravel is a relatively scarce resource in this area and it is currently being hauled some 15-20 miles for use in Colorado City. Johnson Spring, Moonshine Ridge, and Lost Spring Mountain are all located in areas of high potential for the occurrence of this resource and their designation would have a significant adverse impact on the development of aggregate resources within these areas.

In the Virgin River ACEC, significant gravel resources are known to occur and have been developed on exposures of alluvial terraces formed along the Virgin River.

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Accessible gravel on public land is a relatively scarce resource in this area. This ACEC is located in an area of high potential for the occurrence of this resource and by not allowing disposal would have a significant adverse impact on the development of aggregate resources used in Littlefield and Beaver Dam areas. One area of gravel occurrence has been excluded from the ACEC. This area, an old aggregate source used in construction of I-15, should provide gravel for a number of years.

FROM SPECIAL STATUS ANIMALS AND OTHER WILDLIFE RESOURCES

Through the planning process, certain wildlife species would be protected by the imposition of seasonal restrictions which would apply to leasable mineral exploration. The protected species include bighorn sheep and the endangered peregrine falcon. In order to protect bighorn sheep during the breeding season, oil and gas exploration activities would be prohibited between December 1 and May 31. This limitation would apply to the lower Grand Wash Cliffs as this is the only area of bighorn sheep habitat not substantially within designated wilderness. The imposition of this stipulation could cause delays, adversely impacting oil and gas lease operations. The area, however, is rated as having a low potential for the occurrence of oil and gas resources. Any leases issued in this area would be available for exploration for a six month period between June 1 and December 30.

Peregrine falcon habitat has been identified in certain portions of the district. This habitat is important to the peregrine falcon during the nesting and breeding season. In these areas, oil and gas exploration activities would be prohibited from March 1 through September 30. This limitation would apply to the following areas: Vermillion Cliffs; Kanab Creek; Marble, Gramma, Hack, Parashant and Dansil canyons; and the upper Grand Wash Cliffs. The imposition of this stipulation could cause delays, adversely impacting oil and gas lease operations. The majority of these areas are, however, rated as having a low potential for the occurrence of oil and gas resources. Any leases issued would be available for exploration for a seven month period between August 1 and March 1.

FROM OHV DESIGNATIONS

Designating acreage as closed to OHV use would have a negative impact on exploration for and development of all mineral resources in those areas. The impact would result from delays in exploration and development programs as a result of complying with the plan approval process required to bring equipment into these areas.

All of the OHV closed areas are located in areas of high or moderate potential for the occurrence of locatable mineral resources. Two of these areas, Kanab Creek and Grama Canyon, are located in areas of not only high mineral resource potential, but also in areas where the exploration for and development of uranium mineral resources has been intense. In the case of the OHV closure along Marble Canyon, even though no uranium mining activities have been conducted, the area has a high potential for the occurrence of uranium in breccia pipes. The OHV closed area on the Beaver Dam Slope is located in an area having a moderate potential for gold resources. The closure of these areas would require the filing of a plan of operation for any activity which would use motorized vehicles as the form of access. This plan would require the preparation of an environmental assessment prior to its approval. This could result in a 30 to 90 day delay for each operation. Operations which are determined through the environmental review process not to cause undue or unnecessary degradation would be allowed to proceed.

The limited OHV designations are not expected to significantly impact the development of oil and gas resources since mineral exploration is an exception to the limited designations.

FROM VISUAL RESOURCES

No surface occupancy would be allowed on any lease issued within the Virgin River Gorge Scenic Withdrawal, Kanab Creek or Grama Canyon. This restriction would be applied to protect visual resources in these canyons. The imposition of this stipulation could negatively impact oil and gas lease operations and operations conducted under 43 CFR 3150. Given the steep terrain in these canyons and the limited access available in the canyon bottoms, this stipulation is not expected to have a significant effect on oil and gas exploration operations. Furthermore, the majority of these areas have been assigned a low potential for the occurrence of oil and gas resources.

Restrictions prohibiting surface occupancy on slopes of greater than 30 percent would be applied to Moccasin Mountain, the Hurricane Cliffs escarpment, Diamond Butte, the upper and lower Grand Wash Cliffs, and Andrus, Dansil and Parashant canyons. These stipulations are designed to limit surface-disturbing activities which would cause a long term visual impact in these areas. The imposition of this stipulation could negatively effect oil and gas lease operations and operations conducted under 43 CFR 3150. Oil and gas could still be leased.

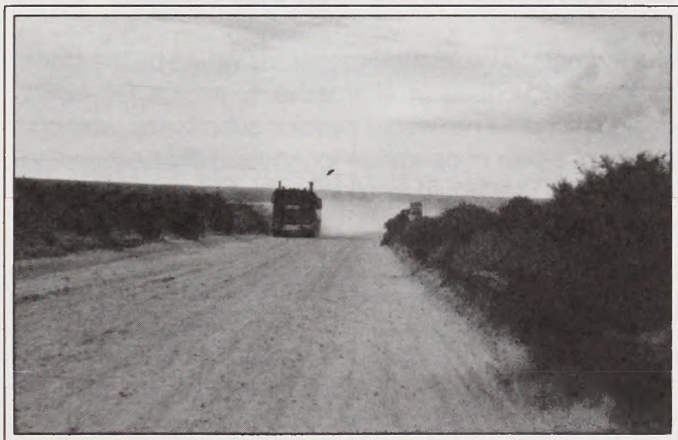
Drilling and development, however, would have to be conducted via directional drilling techniques. These techniques are costly in both exploration and development dollars. Leases issued with stipulations of this nature are less likely to be explored due to the higher cost. Portions of these areas are located in areas rated as having a moderate potential for the occurrence of oil and gas resources.

CONCLUSION

Implementation of this alternative would restrict or preclude mineral resource exploration and development in certain areas to protect or accommodate other nonmineral resources and uses. Land disposals would discourage mineral resource exploration in specific areas while land acquisitions would encourage exploration in others. Impacts from withdrawal revocations would be the same as Alternative 1.

ACEC designations would encumber locatable mineral resource exploration and development through delays associated with plan approvals. The majority of ACEC proposals lie in areas of high potential for the occurrence of mineralized breccia pipes. The remainder of ACECs lie in areas of moderate potential for the occurrence of gold resources. Mineral material disposals would be prohibited in the ACECs. In the case of Virgin River, Moonshine Ridge, Johnson Spring and Lost Spring Mountain ACECs, this could adversely impact the availability of aggregate needed by local communities.

OHV closures would also negatively impact the exploration for locatable mineral resources. In these areas, a plan would be required for any activity proposing to use motorized vehicles as a form of access. Impacts would result from delays required by the plan approval process. The proposed closed areas are all located in areas of high or moderate potential for the occurrence of locatable mineral resources.



Uranium haul truck on the Mt. Trumbull road.

Restrictions designed to protect visual resources would negatively impact leasable mineral operations through the prohibition of surface occupancy. This could require off lease exploration and development in these areas. Leases issued with stipulations of this nature are less likely to be developed due to the associated higher costs.

IMPACTS TO CULTURAL RESOURCES

FROM LANDS

Through the land exchange program, 147,600 acres of state land and their yet unknown and uninventoried cultural sites would come under federal protection.

Under this alternative, proposed land actions would include acquisition of 240 acres of private and 2,960 acres of state land on Moonshine Ridge, as well as 160 acres of private and 960 acres of state land under federal ownership and management on Lost Spring Mountain. Private and state land on the Paria Plateau would also come under federal ownership.

Impacts to cultural resources in priority areas would result from inclusion of more sites under federal protection with special designations. Bringing these previously state and privately owned sites under special designation management would be beneficial over the life of the RMP. Sites would be protected by law enforcement and educational efforts. The NEPA process would mitigate all federal actions. With the exception of erosion, loss of cultural artifacts would be reduced significantly.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

With the following exception, cultural resources would be afforded the same level of protection as under Alternative 1 (current management). In order to protect fragile cultural resources from impacts of activity associated with exploration, Johnson Spring, Lost Spring Mountain, Moonshine Ridge, Witch Pool, Nampaweap, and Little Black Mountain ACECs would be established. These ACECs contain unique cultural resource values of National Register quality or areas of high site density. By virtue of the ACEC designations, plan of operation approval would be required for all operations exceeding casual use within the ACECs. The benefit of this alternative to cultural resource management would be in the form of an extended review period for what would otherwise be a notice level operation. The review period would be extended from 15 days to 30 days unless substantial

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public interest is expressed, in which case up to 90 days may be taken for the review. Should significant cultural resource values be unavoidable in a proposed operation, they would be evaluated for National Register eligibility. Should the values be determined to be eligible, a program of mitigation would be developed as outlined under current management.

Within these ACECs, class III cultural resource inventories would be required for all areas which would be impacted by geophysical operations authorized under 43 CFR 3150 and 43 CFR 3160. Under this alternative, an increased level of protection would be afforded those resource values which may be susceptible to impacts resulting from geophysical surveys. This would be a long term beneficial impact to cultural resources. Protection of cultural resources from other oil and gas exploration or production operations would be the same as outlined under Alternative 1 (current management).

FROM WOODLANDS

Designating both green and dead and down wood-cutting areas in the Vermillion Resource Area would result in a positive impact to cultural resources because all areas designated would be inventoried and all National Register listed or eligible properties would be omitted from the cutting areas. Designated green wood-cutting areas in the Shivwits Resource Area would have a similar positive impact.

FROM SPECIAL DESIGNATIONS

Six areas including 18,710 acres (Lost Spring Mountain, Moonshine Ridge, Johnson Spring, Little Black Mountain, Witch Pool, and Nampawep are proposed for designation as Areas of Critical Environmental Concern (ACEC) for important cultural resource values. Two areas encompassing 159,000 acres in the Parashant and Mt. Trumbull are proposed to be designated as Resource Conservation Areas (RCA) and would provide more focused management of multiple-use resources including cultural resources. The Paria Plateau would be designated as a Special Recreation Management Area (SRMA) and covers 227,000 acres. Four other areas (Beaver Dam, Virgin River Corridor, Fort Pierce, and Marble Canyon) totaling 40,500 acres would also be designated as ACECs for other reasons, which would afford additional protection to unknown cultural resource values.

In these areas, management prescriptions (Table II-2) would be implemented to protect and preserve cultural resources and would be a long term beneficial impact. The areas of cultural priority would receive increased

ranger patrols as part of the special designation management. Patrols would reduce vandalism, OHV activities, and loss of context of cultural resources. Losses in areas of cultural priority would be low, including natural losses to erosion. ACEC, SRMA, and RCA designation would occur on 445,210 acres with benefits to cultural values.

FROM OHV DESIGNATIONS

Cultural properties would not be accessed and vandalized as easily and physical damage to those properties by OHV traffic would be reduced. This would be a long term beneficial impact.

CONCLUSION

Alternative 2's management would result in beneficial impacts to the cultural resources. However, there would be some losses to vandalism, OHV activity, and natural processes. Natural losses of cultural values would always occur due to weathering processes. Cultural value losses from vandalism and OHV activity would be lower in areas designated as ACECs, RCAs or SRMAs due to increased management emphasis.

IMPACTS TO SOIL, WATER AND AIR RESOURCES

FROM LANDS

The proposed right-of-way corridor would have positive impacts in that disturbances would be concentrated within a narrow area. Mitigation measures approved through site-specific EAs would reduce or alleviate any potential impacts to watershed values.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Impacts to watershed resources would be the same as those described in Alternative 1, except for ACEC designations. This would require submission and approval of a plan of operation for any activities exceeding casual use. This would result in positive impacts to watershed resources.

Under Alternative 2 past and projected impacts from leasable mineral development to watershed resources would be the same as those described under Alternative 1. Seasonal lease stipulations for special status species would have a beneficial impact to watershed resources.

FROM WATERSHED

Implementation of watershed activity plans for degraded watershed areas by priority would have a high beneficial impact on watershed conditions.

FROM RIPARIAN

Under Alternative 2 riparian area management would continue to receive high priority for management attention. Implementation of grazing systems to improve riparian areas would change use patterns and allow deferment and rest. This would have a long term beneficial impact to soil and water resources in these small but important areas. As done in the past, exclusion of grazing would be implemented by fencing important riparian areas when warranted and feasible and would be a high beneficial impact. More intensive management of the watersheds above riparian areas would be considered.

FROM FORESTRY/WOODLAND

Under this alternative, the areas available for fuel-wood cutting would be identified, inventoried, and designated. This should confine impacts to specific areas. Increased surface disturbance is anticipated as nearby population centers grow. The moderate adverse environmental impacts from Alternative 2 are similar to those described under Alternative 1 except that they would be confined to pre-selected areas. In certain areas pinyon-juniper manipulation could be designed specifically to reduce erosion problems and would be considered a positive impact. Positive impacts would also occur to wildlife and grazing.

Ponderosa pine harvest throughout the district, except in wilderness areas, would only be done to enhance other resource values. This would be beneficial to watershed resources in that there would be less surface disturbance. However, this management strategy tends to increase the risk of catastrophic fire. If this were to happen the impact to watershed resources would be significantly adverse.

FROM OHV DESIGNATIONS

Limiting OHV use to existing and/or designated roads and trails or closing certain areas would reduce future erosion. These actions would protect both vegetative and cryptogamic cover and thus protect the soil from accelerated erosion. This is most significant on fragile and/or saline soils (Maps III-10 and III-11), espe-

cially those close to towns. OHV closures would enhance water quality by reducing salt loading and sedimentation in highly erosive areas. Soil rutting and the resulting gully erosion over all soil types would be reduced. This would also reduce wind erosion south of St. George and east of Fredonia. Designation of an open OHV area east of Fredonia would result in further negative impacts if use were to increase due to the designation. Along with the OHV designation would be certain road closures. These closures would be beneficial for watershed condition by improving vegetative cover and reducing soil loss from both wind and water.

FROM TRANSPORTATION

Impacts to watershed resources would be the same as those described under Alternative 1 and as described above under impacts from OHV.

FROM FIRE

Impacts to watershed resources would be the same as those described under Alternative 1.

CONCLUSION

Under Alternative 2 beneficial impacts to watershed resources would be derived from placing a higher priority on watershed, including developing overall management plans for all areas of moderate to severe erosion condition and implementing management actions to improve riparian areas. There would also be beneficial impacts due to areas with special management designation, OHV designations, and subsequent road closures. Otherwise the watersheds would continue to improve as described under Alternative 1.

IMPACTS TO SPECIAL STATUS SPECIES

FROM LANDS

- Ownership Adjustments

Under this alternative, 210 acres of category III tortoise habitat (areas of low value in sustaining viable populations of tortoise) are identified for potential transfer by lease or sale under the Recreation and Public Purpose Act (R&PP). This same land plus an additional 2,927 acres are identified for disposal by exchange provided better quantity or quality tortoise habitat can be acquired in the same area and the net effect would be

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beneficial to tortoise recovery. If the 210 acres of tortoise habitat is sold, rather than exchanged, there may be a negative impact to historic tortoise habitat. However, there are no tortoises on this land at present and the historical habitat has been essentially destroyed, so impacts would be minimal. The proposed transfer of 2,927 acres by exchange would benefit tortoise population by increasing the quantity or quality of habitat in the area.

Impacts from exchange with the State of Arizona would be similar to Alternative 1.

FROM RIGHT-OF-WAY CORRIDOR DESIGNATION

Continuation of the existing Navajo-McCullough R/W corridor in desert tortoise habitat would not be permitted. All future right-of-way authorizations would be routed, constructed, and maintained in a manner that adverse impacts to the tortoise population would be avoided to the extent possible. Processing future right-of-way requests in this area, when they are not confined to a corridor, would provide the flexibility to identify routes that minimize impacts to desert tortoise recovery.

FROM WILDLIFE HABITAT MANAGEMENT

Wildlife management activities as proposed under Alternative 2 would intensify monitoring of wildlife objectives and help to improve management efforts for all wildlife species, including special status animals.

Monitoring information would be summarized and included into future HMP revisions, improving the effectiveness of wildlife management and those planned actions beneficial to special status animals. The proliferation of predators as a result of management activities would be evaluated as to their effect to desert tortoise.

FROM RIPARIAN

Special status animals would be positively impacted by the actions proposed for the improvement of riparian habitats. The woundfin minnow, the Virgin River roundtail chub and the Virgin River spinedace would be beneficially impacted as riparian habitats along the Virgin River are improved through regulation of other land use activities.

Peregrine falcon prey base would likely improve as riparian conditions improve the quality of habitat for a number of bird species.

FROM SPECIAL DESIGNATIONS

Designating 20,800 acres as the Beaver Dam ACEC and 8,100 acres as the Virgin River ACEC would have highly beneficial impacts to those special status animal species that exist within those areas, when managed in accordance with prescriptions in Table II-2. These designations include management prescriptions which would regulate activities that would otherwise negatively impact the desert tortoise. The Virgin River designation would protect important riparian habitat and water quality necessary to the special status fish species.

Management prescriptions for the Virgin River ACEC would include acquiring high value riparian private/state properties along the river, limiting OHVs to designated roads, closing bottomlands to material sales, and requiring plans of operation for mineral exploration and development.

The management prescription for the desert tortoise ACEC would facilitate the overall goal of the Rangewide Plan for Desert Tortoise Management, "...to manage habitat so as to ensure that viable desert tortoise populations exist on public lands." It would also be in compliance with goals for category I habitat areas, that is; maintain stable, viable populations, protect existing tortoise habitat values, and increase populations where possible.

The ACEC designation of Fort Pierce, Lost Spring Mountain, Moonshine Ridge, and Johnson Spring includes 4,200 acres of Siler pincushion cactus habitat. Management prescriptions (Table II-2) include increased management and conservation measures such as OHVs limited to designated roads, mineral exploration and development activities requiring an approved plan of operations, and increased law enforcement patrols to deter collection. Long term beneficial impacts from these actions would occur.

The Brady pincushion cactus would have 10,700 acres of habitat designated as ACEC (Marble Canyon) with the same management prescriptions and beneficial impacts for the Siler pincushion cactus. Fick pincushion cactus occurs in part of the Marble Canyon ACEC and would benefit from the management prescriptions.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

With the following exceptions, special status species would be afforded the same level of protection as under

Alternative 1 (current management). In order to protect special status species from impacts resulting from mineral exploration, Beaver Dam, Virgin River, Fort Pierce, Johnson Spring, Lost Spring Mountain, Moonshine Ridge, and Marble Canyon ACECs would be established. By virtue of the ACEC designations, plan of operation approval would be required for all operations exceeding casual use within the ACECs. The benefit of this alternative to special status species management would be in the form of an extended review period for what would otherwise be a notice level operation. The review period would be extended from 15 to 30 days, unless substantial public interest is expressed, in which case up to 90 days may be taken for the review. Should special status species be found within the area of proposed operations, they would not be permitted to be adversely impacted.

In addition to the ACEC designations, the Beaver Dam ACEC and an area bordering Marble Canyon would be closed to OHV activity. Thus, all operations proposing to use motorized vehicles as a form of access in the areas closed to such use would require plan of operation approval. Prior to plan approval, an inventory for endangered species would be completed. Any species found to occupy the area of proposed operations would be required to be avoided or protected from adverse impacts.

The ACECs would be closed to mineral material disposals which would have a long term beneficial impact to special status species.

Proposed activities and impacts from leasable mineral exploration and development under Alternative 2 would be the same as Alternative 1 with the following exception. Lease stipulations would be applied to protect peregrine falcons during breeding and nesting season. This restriction would allow exploration activity only during the period between August 1 and March 1. The restriction would apply to areas open to lease within one mile of superior, acceptable, or historic peregrine habitat in the following areas: Grand Wash Cliffs; Dansil Canyon; Andrus Canyon; Grama Canyon; Hack Canyon; Kanab Creek; Marble Canyon and the Vermillion Cliffs. This action would provide a long term beneficial impact to peregrine falcon from potential oil and gas exploration activities.

FROM OHV DESIGNATIONS

Designating 1,811,900 acres limited to existing roads and trails, 690,400 acres limited to designated roads and trails, and 45,100 acres closed would have a beneficial short and long term impact to habitats of special status

species. Compliances with the OHV designations would be assured through frequent surveillance by the district ranger.

CONCLUSION

This alternative would provide long term beneficial impacts as it would provide additional protection of special status species through ACEC designation, associated increased management attention and OHV restrictions. Mineral activities in ACECs would require a plan of operations before any land could be disturbed, thus, insuring the protection of the species and resulting in long term beneficial impacts.

This alternative also provides for the protection and management of habitats important to the existence of the special status animals. Special designations and management of the Beaver Dam and Virgin River areas provide needed emphasis for protection of unique resources. All authorized land use activities and resource disciplines would be directed towards habitat improvement important to special status animals. Seasonal restrictions applied to leasable mineral resource exploration operations would be provided for the benefit of peregrine falcon.

Land exchanges which acquire state and private lands into federal ownership for desert tortoise or riparian areas along the Virgin River for special status fish, would provide a long term beneficial impact.

IMPACTS TO RIPARIAN AREAS

Impacts would be the same as Alternative 1 except as shown below.

FROM LANDS

Proposed acquisition of state and private lands along the Virgin River would be a long term positive benefit to the riparian area.

FROM SPECIAL DESIGNATIONS

Under this alternative, a significant riparian area along the Virgin River (8,100 acres) would be designated as an ACEC. Management prescriptions for the Virgin River ACEC include acquisition of high value riparian private/state properties along the Virgin River, closure of bottomlands to material sales (gravel), limiting OHVs to

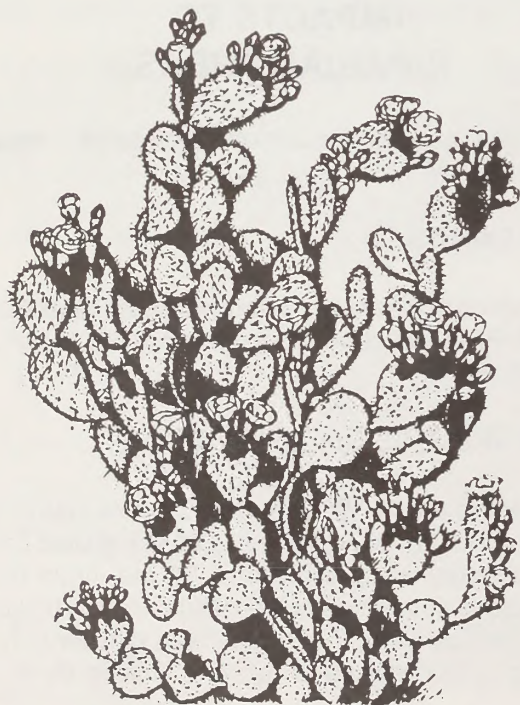
designated roads, and requiring a mining plan for operations exceeding casual use. Impacts of special designations on riparian plant communities would be positive over the short and long term. Riparian vegetation previously trampled or driven over would grow and increase, allowing stream banks to build up and provide shade to aquatic organisms, both vital processes necessary for improvement of riparian habitat.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

In most identified riparian areas, locatable mineral resource exploration and development operations proposed under a plan of operation would be regulated to prevent long term adverse impacts. Operations conducted under a notice would be required to cause no unnecessary or undue degradation to the environment, including riparian areas.

CONCLUSION

Impacts would be the same as Alternative 1, except that riparian areas along the Virgin River would receive additional protection and management. Acquisition of high value riparian areas along the Virgin River would be pursued. Impacts from locatable mineral exploration and development activities would be avoided. This would be a short and long term beneficial impact to the riparian area resources.



IMPACTS TO FOREST/WOODLAND RESOURCES

FROM LAND OWNERSHIP ADJUSTMENTS

Through the land acquisition program, 560 acres of state lands would bring more ponderosa pine under federal management. This would facilitate management by eliminating political boundaries and replacing them with natural boundaries. Disease or insect control should be easier and less costly.

FROM MINERAL RESOURCES

Impacts to forestry/woodland resources would be low as outlined under Alternative 1 (current management).

FROM FOREST AND WOODLAND MANAGEMENT

Under Alternative 2, 10,700 acres of Uinkaret Mountain, 3,400 acres of the Parashant, 1,100 acres of Black Rock Mountain ponderosa pine forest would all be managed to enhance other resources. Management prescriptions for accomplishing this include carefully designed selective thinning, disease control, prescribed burning, and prescribed management of naturally-occurring fire to reduce ground fuel.

Selective thinning would allow removal of trees stagnated from shade and overcrowding, thus allowing remaining trees to grow more rapidly and creating a beneficial impact. Thinning would remove diseased trees to control or remove insect infested or disease prone trees. Prescribed burning would remove heavy needle duff, dense understory vegetation, and dead wood. Burning would also be a thinning operation to reduce insect and disease potential, wildfire potential, and to free up water, minerals, and nutrients for the remaining trees. These would all be positive impacts.

Under this alternative, 312,000 acres of the 800,000 acres of pinyon-juniper woodland would have woodland management plans designed for small cut areas within that 312,000 acres. As demand for fuelwood is estimated not to increase on the Arizona Strip, the impact to woodlands from woodcutting is not expected to change from Alternative 1. Management plans would allow cutting to be better managed and concentrated by providing small (5-10 acres) clear cut areas. Impacts of this would be to

create openings in the PJ woodlands where herbaceous vegetation would increase and young trees would be allowed to grow faster. Slash left from wood cutters would be cleaned up and desired plants such as grass, shrubs and forbs could be planted, creating positive impacts.

FROM SPECIAL DESIGNATIONS

The Mt. Trumbull/Mt. Logan and Parashant areas would be managed as Resource Conservation Areas. Ponderosa pine in these areas would be managed for the benefit of other resource values. This would restrict the productive potential of these forests but would maintain them in a healthy condition.

Dead and down fuelwood cutting in the Vermillion Resource Area would be restricted to specific areas under this alternative, causing a negative impact.

By closing Johnson Spring, Lost Spring Mountain, and Moonshine Ridge ACECs to all woodland harvest and Canyons and Plateaus of the Paria SRMA closed to fuelwood and post gathering, a moderate negative impact would be felt by those who have used these areas in the past for woodland products.

CONCLUSION

Through this alternative, the forest would become healthier and old growth ponderosa pine would remain uncut. Thinning operations would provide more nutrients and water to the remaining trees allowing them to grow larger, however, certain younger trees would remain suppressed by the older pines causing a negative impact. The population would remain older making it more vulnerable to disease and insects. However the forest would satisfy many other resources depended on old growth and medium-aged pines, such as raptors, turkeys, deer, and the Kaibab squirrel.

Intense management of cutting in the woodlands would have a positive impact on the cut areas. The small clear cuts would be like natural openings, which after clean up of slash, would release the young trees and herbaceous vegetation.

Some areas of special designation would be closed to woodland harvest. Some of these areas are especially important to firewood and post-cutting because of their close proximity to communities. The closure would be an adverse impact.

IMPACTS TO GRAZING MANAGEMENT

FROM LAND OWNERSHIP ADJUSTMENTS

Potential disposal of 17,170 acres of public land would have a long term moderately adverse impact upon grazing permittees due to loss of acreage available for grazing. Salvage or reimbursement for range improvements would be required. Fencing to exclude disposal tracts from an allotment would also result in negative impacts if this were necessary. Disposal of this acreage would result in loss of approximately 858 AUMs and \$1,597 in grazing fee receipts each year. Range betterment funds would be reduced by approximately \$798 annually.

Acquisition of 147,600 acres of state land and 9,700 acres of private land under this alternative would have highly positive long term impacts upon rangeland resources. This is particularly beneficial since lands to be acquired by state and private interests are in Apache and Navajo Counties of the Phoenix BLM District. Upon completion of the exchanges some 7,865 AUMs of forage would be available which would produce \$14,629 in revenue annually. Of this, \$7,314 would be available through the range betterment fund. Administrative coordination requirements would be reduced, increasing efficiency. Permittees would conduct business with only one agency, where presently two exist.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Both positive and negative impacts could occur to livestock grazing from mineral development as described in Alternative 1.

FROM SPECIAL DESIGNATIONS

Designation of the Marble Canyon, Johnson Spring, Lost Spring Mountain, Moonshine Ridge, Witch Pool, Nampawap, and Beaver Dam Slopes ACECs and Paria Plateau SRMA would impose long term moderate negative impacts to livestock grazing. Management prescriptions for these areas would place constraints on rangeland improvements. Range improvements would be restricted within 100 yards of existing cultural sites. Beaver Dam Slope ACEC would continue to be managed consistent with the Rangewide Desert Tortoise Plan. The plan imposes constraints which include limiting, precluding, or deferring livestock use to enhance desert tortoise habitat conditions and limits on range improvements.

CHAPTER IV- ENVIRONMENTAL CONSEQUENCES

Pinyon-juniper woodland in the Mt. Trumbull RCA has little understory vegetation and low forage production. Treatment through chaining or burning would enhance rangeland resources. Management prescriptions for the RCA could restrict vegetation treatments to enhance natural values. This could impose along term negative impact of moderate intensity.

Rangeland conditions in the Parashant RCA would be expected to improve under this alternative. The current rest the allotment is receiving followed by proposed moderate use would benefit the area's vegetation. Using the allotment to provide rest on other grazing allotments would benefit rangelands in surrounding areas.

FROM TRANSPORTATION AND OHV DESIGNATION

OHV designations would have a low negative impact on rangeland management. Closing areas to OHV travel could restrict access to range improvements and monitoring cattle. Limiting access to existing roads and trails would have only a minor impact on rangeland management because permitted users could travel across country. In the designated roads and trails areas, off-highway travel would be authorized on a case-by-case basis. This could create a hardship on ranchers. Closing roads in the designated to existing roads and trails areas would only have a minor impact because only roads not needed for resource management would be closed.

FROM SPECIAL STATUS SPECIES

Management prescriptions from the Beaver Dam desert tortoise ACEC, the Rangewide Desert Tortoise Plan and biological assessments of the livestock grazing impacts in desert tortoise habitat could place constraints on new range improvements, season of use, utilization levels, stocking rates and livestock management, including limiting, precluding, or deferring livestock use. This could impose long term highly negative impacts upon the livestock grazing permittee.

FROM WATERSHED MANAGEMENT

Placing 48 allotments in watershed category 1, 59 allotments in category 2, and 46 allotments in category 4 to initiate intensive watershed management could conserve topsoil and improve vegetative production as well as effective water use. These factors would have a beneficial effect upon rangeland condition and consequently on rangeland resources. Healthy rangelands are essential to sustained resource production. In some

cases, less water runoff could cause livestock water reservoirs to be dry or short of available water.

Watershed disturbance from mining activity would not impact rangeland resources because of the limited acreage involved and rehabilitation requirements placed on surface-disturbing activity.

CONCLUSIONS

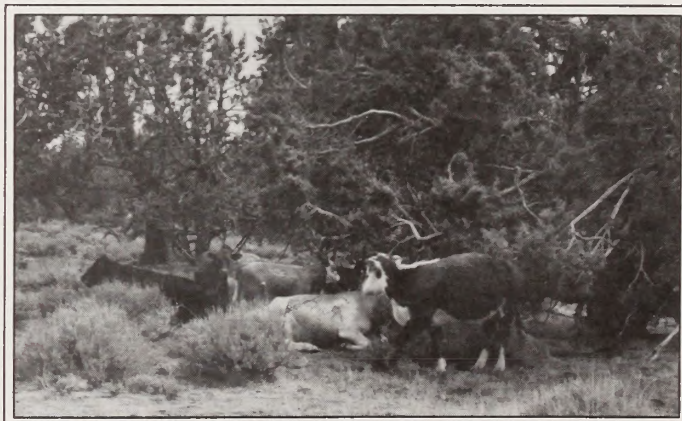
Disposal of 17,170 acres of public land would reduce acreage available for livestock grazing. Approximately 858 AUMs and \$1,597 in grazing fee receipts would be lost each year. Range betterment funds would be reduced by approximately \$798 annually.

Acquisition of 147,600 acres of state land and 9,700 acres of private land would potentially make available 8,550 AUMs on public lands. This could result in grazing fee receipts of \$14,629 and make available \$7,314 of new range betterment funds each year. Administrative efficiency could also be improved by opportunities to eliminate need for coordination with the state on grazing matters and by elimination of exchange of use permits.

Negative impacts to grazing management would result from ACEC designation and actions resulting from the biological assessment of livestock grazing in tortoise habitat. Constraints would be placed upon livestock grazing options and range improvements.

Rangeland productivity would be enhanced by implementation of intensive watershed management. Reservoir water storage may be diminished by reduced overland water flows.

Off-highway vehicle designations would have minimal negative impacts since OHV travel would be allowed for permitted uses.



Livestock grazing.

IMPACTS TO WILDLIFE RESOURCES

FROM LAND OWNERSHIP ADJUSTMENTS

Land ownership adjustments would have a low impact to wildlife resources. Land disposals or acquisitions must be in the public interest and therefore, in most cases, would have minimal adverse impacts to wildlife.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Impacts to wildlife resources and habitat from locatable mineral resource exploration and development would be the same as outlined under Alternative 1. Impacts to wildlife habitat from mineral exploration are minor and are mitigated through reclamation at the cessation of operations.

Impacts from leasable mineral exploration and development are generally the same as described for Alternative 1. In addition, under this alternative, restrictions would be applied to protect bighorn sheep during the critical lambing period. This restriction would allow exploration operations only during the period between June 1 and November 30. This restriction would apply to the lower Grand Wash Cliffs between the Grand Wash Wilderness Area and Lake Mead National Recreation Area. The remainder of bighorn sheep habitat in the district is located within wilderness and oil and gas exploration operations are prohibited by virtue of wilderness designation.

These lease restrictions would avoid the potential for a moderate negative impact to bighorn sheep reproduction.

FROM WILDLIFE HABITAT

Under Alternative 2, a positive impact to wildlife resources would be expected. Wildlife species would receive needed protection during certain times of the year from mineral leasing. This should help maintain reproduction for important wildlife species. Bighorn sheep populations would be managed according to the biological capacity of the range. Changes in class of livestock from cattle to sheep and/or goats would not be authorized on identified bighorn sheep ranges. Pronghorn antelope populations would be managed to those levels compatible with rangeland resources.

Increased monitoring of wildlife habitats and wildlife objectives would be accomplished to provide data relevant to future revisions of the six HMPs.

Removal of the bighorn sheep enclosure would improve the naturalness of the Paiute Wilderness Area, but eliminate future opportunities for its use.

FROM RIPARIAN

Increased emphasis on riparian management and working to improve riparian conditions would have highly beneficial impacts to wildlife resources as habitats and species diversity improve. Efforts to inventory and describe riparian areas would result in the eventual improvement of riparian conditions as the information is used to improve management. Designating the Virgin River ACEC would provide necessary management direction, such as requiring a plan of operation for proposals to develop locatable minerals.

FROM WOODLANDS

Establishing woodcutting areas for personal and commercial harvest would have a positive impact to wildlife resources from two perspectives. It would reduce the amount of indiscriminate woodcutting, including green trees, that provide important nesting or feeding habitat. It would also concentrate cutting in selected areas to help accomplish wildlife objectives such as adding diversity to closed tree stands.

FROM FORESTRY

Managing ponderosa pine forests under provisions of management Category C, "forest management for the enhancement of other uses" would be beneficial to wild turkey, Kaibab squirrel, goshawks, and other dependent species. Additional benefits would be provided through understory improvement and maintenance of mature, dead standing, and new growth ponderosa pine in the forest.

FROM WATERSHED

Watershed categorizations and subsequent management and improvements would improve overall wildlife habitat values. Cover and forage values would increase as projects and improved management are implemented.

FROM OHV DESIGNATIONS

Controlling OHV use on the district would have a beneficial impact on wildlife. General public use would be prohibited in certain areas or confined to existing or designated roads and trails, except for 1,400 acres that would be designated as open. This open area is located near Fredonia and contains marginal wildlife habitat. Damage to habitat and disturbance of wildlife species would be reduced due to the proposed restrictions.

FROM LIVESTOCK GRAZING

Prohibiting changes in class of livestock from cattle to domestic sheep on bighorn sheep ranges would avoid serious conflicts with bighorn sheep.

FROM SPECIAL DESIGNATIONS

Designation of the Parashant RCA and subsequent management prescriptions would have positive impacts to wildlife resources. Restricting certain land use actions, including OHV, would benefit wildlife. Managing the ponderosa pine forest and grazing to complement wildlife, watershed, or other resource values would have positive impacts.

Acquiring state and private lands in the Mt. Trumbull RCA would enhance wildlife values through inclusion of additional habitat under multiple use management. Reducing overall surface disturbance, increasing habitat qualities, and managing the area to conserve rather than obligate resource components would have positive impacts to wildlife values. Managing for a mature component of the ponderosa pine forest would be highly beneficial to wildlife.

CONCLUSIONS

Lands acquisition could positively affect wildlife by securing additional habitat. Exchanges may also be beneficial by acquisition of high value habitat such as crucial summer or winter ranges.

Improved watershed management to reduce soil loss would result in positive benefits to a broad diversity of wildlife species and habitat. Wildlife resource values would also benefit from oil and gas lease stipulations designed to protect wildlife species and habitat. Actions proposed in the Mt. Trumbull and Parashant RCAs would positively impact wildlife resource values.

Management of ponderosa pine forests as provided for under Alternative 2 would ensure continued provision for quality wildlife habitat for those dependent species.

IMPACTS TO RECREATION RESOURCES

FROM LANDS

- Land Ownership Adjustments

Implementation of Alternative 2 would result in 4,070 acres of lands being available for sale or exchange. An additional 13,100 acres would be available for exchange or conveyance subject to the R&PP, if shown to be in the public interest. All other land would be segregated against transfer to other ownership and agricultural entries (Map II-4). Up to 17,170 acres could be removed from public land management and any recreational opportunities associated with those acres such as sight-seeing, OHV use, and gathering forest products would also be lost. Moderate adverse impacts could result from such a loss. Some potential requests under the R&PP may enhance urban-oriented recreational opportunities in the form of public parks.

Implementation of Alternative 2 could result in acquisition of 147,600 acres of state land and 9,700 acres of private land (Map II-4). All acquired lands would be subject to operation of all public land laws unless specifically modified by the opening orders associated with specific acquisitions.

Overall, the variety of recreational opportunities described in Table III-20 and activities described in Table III-22 are expected to be enhanced through better management, more consistency of direction, and increased regulation of natural settings.

- Airports

Implementation of Alternative 2 would result in continued administration of existing airports and include the expansion of the Colorado City airport in coordination with ADOT and the FAA.

Additional requests for airport leases or grants would only be considered in area A (Maps II-1). Continued administration of existing airports would have only low adverse impacts to recreational opportunities dependent on remote natural settings. These impacts are generally associated with intermittent landings and takeoffs which create acoustical disturbance in those areas adjacent to the airports.

Realistically, few proposals are expected throughout the life of the plan. However, any removal of lands from

public ownership could encumber or eliminate opportunities for the public to engage in the variety of recreation activities described in Table III-22. If such proposals are submitted, mitigating measures are available to reduce impacts to recreational settings and opportunities.

- Communication Sites

Implementation of Alternative 2 would disallow expansion of the Black Rock Mountain communication site and establish a new communication site on Seegmiller Mountain. The presence of the Black Rock Mountain communication site would continue to moderately impact the opportunity to experience the natural settings in the area. These adverse impacts dissipate quickly as the user moves away from the facility.

- Withdrawals

Implementation of Alternative 2 would result in larger acres of withdrawal revocations than current management, but would add approximately 200 acres of additional withdrawal revocations associated with the existing FERC powerline authorization.

Impacts to existing recreational settings would be low to moderate from potential surface-disturbing activities, as in Alternative 1, except for the slightly larger acreages involved.

FROM CULTURAL RESOURCES

Implementation of Alternative 2 would result in designation of six cultural ACECs totaling approximately 18,710 acres. In almost all cases, ACEC designation would serve to enhance or protect sensitive resource values including opportunities to enjoy natural settings and view historic and prehistoric cultural resources. As such, high beneficial impacts are expected for recreational settings and associated opportunities.

FROM WILDLIFE

Implementation of Alternative 2 would be similar to current management. However, additional effort will be made to monitor project success and identify limiting habitat factors and improve project maintenance. Emphasis would be placed on monitoring to determine and adjust wildlife to optimum numbers consistent with habitat potential and other resource values. Resulting impacts of enhanced wildlife management are anticipated to provide greater recreational opportunities for viewing

or hunting users. Thus, impacts of this alternative are expected to be more beneficial than under current management.

The removal of the bighorn sheep enclosure in the Paiute Wilderness will have short term adverse impacts during the removal, but the long term impacts would enhance the natural setting in the wilderness.

FROM RIPARIAN

Impacts on certain recreational opportunities such as nature study, hiking, sightseeing, and rafting would be primarily beneficial from designating the Virgin River bottomlands as an ACEC. Adverse impacts to OHV recreation would result from more restrictive OHV designations. Any acquisition of private inholdings would ensure public access along the river corridor resulting in low to moderate beneficial impacts to recreational opportunities.

Continuing the mineral withdrawal in the Virgin River Gorge, requiring a plan of operations for mineral activities outside the gorge, and stipulating no surface occupancy for oil and gas leases within the gorge and would help protect the aforementioned recreational opportunities associated with a riparian setting.

Instream water rights acquisition would ensure continued opportunities for water-related recreation activities, such as rafting and kayaking.

FROM WOODLANDS

Fuelwood cutting would occur on small areas (5-10 acre clear cuts) within these 312,000 acres. The small areas could moderately compromise recreation opportunities for non-woodcutting visitors seeking outdoor experiences in semi-primitive settings. This could impact 15,000 to 30,000 acres more of the lands having semi-primitive settings than current management.

The preferred alternative would, in allowing fuelwood and Christmas tree cutting, provide good opportunities to those who enjoy these uses as recreational pursuits. Fuelwood cutting could be available on 312,000 acres rather than the 21,780 acres available under current management over the life of the plan.

The preferred alternative proposes greater attention to the management of woodland products in the form of woodland management plans than under current management. This, combined with standard operating procedures (e.g. issuing permits, signing and monitoring),

CHAPTER IV- ENVIRONMENTAL CONSEQUENCES

would be highly beneficial to the preservation of semi-primitive and roaded natural (RN) settings that are not designated for woodland product use by ensuring compliance on fuelwood cutting in only designated areas. At any one time in the life of this plan, cutting would be occurring on an estimated 1,000-2,000 acres.

FROM FORESTRY

Ponderosa pine management in the Uinkaret Mountains, the Parashant area, and Black Rock Mountain would likely shift recreation settings on 15,200 acres in the short term toward the more urban end of the recreation opportunity spectrum. Increases in noise and dust, as well as sudden, visible change to the forests, would moderately impact the opportunities for visitors to experience a "less busy" setting during operational periods. Mitigation would reduce dust, however, impacts of increased noise would be unavoidable during forest enhancement operations.

The objectives of Category C forest management (Table II-1), if achieved, would enhance recreational settings on 15,200 acres where forest conditions are currently stagnant and ecological diversity is lacking under current management.

FROM SPECIAL STATUS SPECIES

ACEC designations for special status plants (*P. sileri* and *P. bradyi*) would result in 10,700 acres designated as "closed" to OHV use and 4,200 acres "limited to designated roads and trails". The 10,700 acre closure in the Marble Canyon ACEC would reduce OHV recreational opportunities there. The "limited to designated roads and trails" on the Johnson Spring, Moonshine, Lost Spring Mountain, and Fort Pierce ACECs would reduce OHV opportunities on 4,200 acres. The Beaver Dam ACEC (20,800 acres), designated for the protection of desert tortoise, would be closed to OHV use.

These closures or restrictions on OHV opportunities would benefit those seeking recreation experiences such as hiking, nature study or camping away from OHV use areas.

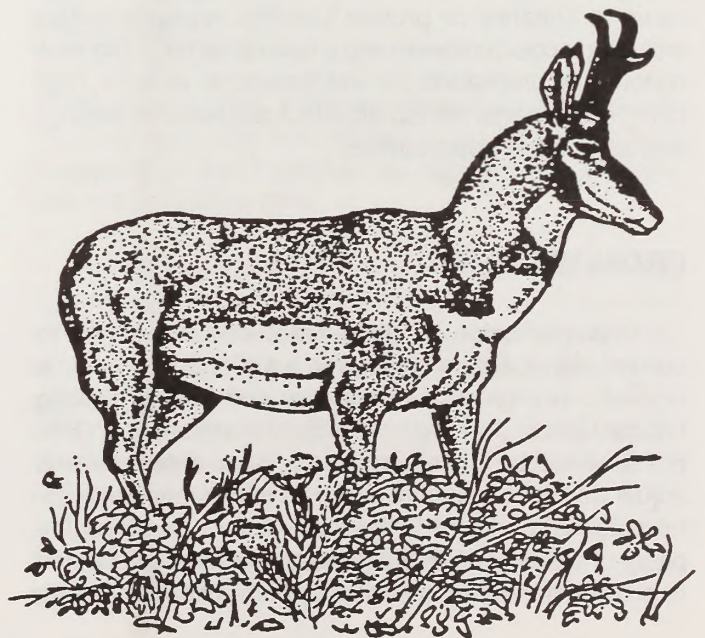
FROM TRANSPORTATION

Implementation of Alternative 2 would result in continued maintenance and improved or increased access only in area A when necessary to support resource management programs. No new permanent roads would be allowed in area B. Realignment of the Arkansas Ranch Road would be allowed. Closures will be identified as individual activity plans are completed.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Under Alternative 2, the impacts of continued locatable mineral exploration and development are identical to Alternative 1 except for the following: 613,000 acres as identified on Map II-1 (area B) would receive enhanced management focus and attention designed to protect special scenic values and remoteness. Mining and exploration impacts would be subject to special stipulations and mitigation to prevent long-term or permanent change in these sensitive areas. Recreational opportunities that depend on remote settings would be protected in B areas using the guidelines described in Chapter II.

Alternative 2 would result in the same projected impacts from leasable mineral exploration and development as described under Alternative 1, except certain identified areas would receive enhanced protection of recreation settings and their associated opportunities through special designations which would require leasing restrictions designed to prevent direct surface disturbance. Specifically, leases within the Virgin River Gorge, Kanab Creek and Grama Canyon would include no surface occupancy lease restrictions to prevent surface impacts for the purpose of protecting important scenic and recreational settings. Other areas with NSO stipulations on 30 percent or greater slopes are Moccasin Mountain, the Hurricane Cliffs, Diamond Butte, upper and lower Grand Wash Cliffs, Parashant, Andrus and Dansil canyons. Such restrictions indirectly benefit recreational users by protecting the physical setting. Appendix 10 describes leasing restrictions for this alternative.



FROM RECREATION

Recreation management under the preferred alternative would provide a much greater focus throughout the district on the amount or type of visitor use, visitor use patterns, experience opportunities or visitor needs than would current management. In the long run, such management would be much more responsive to change, resulting in benefits to visitor experience opportunities described in Table III-20, the various types of activities described in Table III-22 and to the settings on which these opportunities are dependent.

Establishment of the Parashant and Mt. Trumbull Resource Conservation Areas as well as the Canyons and Plateaus of the Paria SRMA, with their associated management prescriptions, would focus management on providing and maintaining moderate to high quality recreational settings on 386,000 acres. Activity plans for these areas and improvement of visitor services are significant actions which would contribute to more intensive recreation management in these areas.

The remainder of the district would consist of large, extensive recreation management areas (ERMAs) with overall management direction coming from the guidance defined for areas A and B. In A areas, recreation management emphasis on 1.9 million acres of the district would be to provide opportunities for visitors to engage in a variety of activities (Table III-22) in settings ranging from roaded natural (RN) to semi-primitive nonmotorized (SPNM). In B areas (613,000 acres), due to their remote nature, the emphasis would shift slightly toward providing opportunities for various activities (Table III-23) that typically take place in more primitive settings.

Providing for a wider variety of recreational uses in the Virgin River Campground is expected to increase use of the area by approximately 50 percent from 62,600 to 93,900 visitor hours. The transportation/access prescriptions allowing only temporary upgrading of existing roads and allowing new roads on a temporary basis only could cause temporary adverse impacts on recreational settings but would have beneficial results by maintaining settings over the long term. Upgrading the campground loop and access roads would be beneficial to campground users.

Recreational opportunities for nonmotorized experiences such as hiking or backpacking would be improved by the proposed "limited to designated roads and trails" OHV designation while those preferring to use vehicles in their recreational pursuits would be adversely impacted due to the reduction in miles of roads and/or trails open for vehicle use.

FROM WILD & SCENIC RIVERS

A portion of the Paria River has been identified as suitable for designation as a Wild and Scenic River. Virgin River segments eligible for study have been assigned potential classifications of wild, scenic, and/or recreational (Appendix 21). Eligibility for designation or study places these rivers under BLM provisions for interim management. Under these provisions, management would provide greater protection and, where possible, enhancement of outstanding and remarkable river values. The free-flowing characteristics of the river segment would not be modified.

Opportunities to engage in various types of primitive recreation activities along those portions of the Paria and Virgin rivers classified as wild and/or scenic are both regulated and protected by current habitat management practices established by wilderness designation and the Endangered Species Act. Under interim management guidelines, recreational opportunities for activities such as rafting and kayaking could be moderately enhanced through new developments along segments of the Virgin River classified as recreational. Proposed access routes and recreation related developments along the shoreline would be evaluated on a case-by-case basis. Interim management guidelines prior to Wild and Scenic River designation require that BLM oppose construction of impoundments or other restrictions to flow under consideration which might affect segments of the Paria or Virgin Rivers.

FROM OHV DESIGNATIONS

Management of OHV use under the preferred alternative would establish designations throughout the district, maintaining or enhancing opportunities for visitors seeking non-motorized, semi-primitive experiences on 310,700 acres "closed" to OHV use. The remaining land is either "limited to existing roads and trails" (1.8 million acres), "limited to designated roads and trails" (690,400 acres) or "open" (1,400 acres). These districtwide designations would help maintain semi-primitive and roaded natural settings by directing OHV use to roads and trails rather than allowing indiscriminate off-road activity. Such designations help maintain physical and social settings, which provide the basis for experience opportunities.

Since there are 5,402 miles of roads and four-wheel drive trails in the district, the preferred alternative would only slightly impact opportunities for the majority of OHV visitors to enjoy backcountry driving experiences. The impact would come in those designations that are either "closed" or where certain existing roads are closed in "limited to designated roads and trails" areas.

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Unlike Alternative 1, the preferred alternative proposes 1,400 acres to be designated "open", which addresses the need for areas in which opportunities for off-road activities, such as ATV and dune buggy use, are authorized.

Additionally, the preferred alternative proposes to develop OHV management plans and disseminate information regarding OHV opportunities and regulations to the public. This is a significant and positive change from current management.

FROM VRM

Alternative 2 provides for designation of 2,000 additional acres as visual resource management class I over current management. The Virgin River Corridor ACEC is designated as VRM class I. An additional 751,400 acres are designated as class II (including B areas). Travel corridors have been designated class II, affording protection of scenic values along proposed scenic and backcountry byways and other main access routes. VRM class objectives provide management guidelines for determining the type and degree of mitigation for proposed projects and developments. The addition of class I and II areas should enhance recreational opportunities for visitors seeking remote and primitive recreation experiences. Off highway vehicle use in the Virgin River Corridor ACEC from the mouth of the gorge to the Nevada state line could be restricted in this designated class I area.

CONCLUSIONS

Land transfers under Alternative 2 would create moderate adverse impacts due to removal of these lands from public ownership, hence the loss of recreation opportunities once available on those lands such as sightseeing, OHV use, and gathering forest products. Acquisitions would create moderately positive benefits to the recreation opportunities described in Table III-20, by placing these lands into public ownership and under extensive recreation management policies of the district.

Airport grant or lease processing only in area A would assure continued protection of recreation settings from airport impacts in the more sensitive area B. Airports authorized in area A would create moderate adverse impacts to visitor experience opportunities in the vicinity of these airports.

Recreational settings could be moderately impacted by piecemeal proliferation of communication sites on high peaks. Opportunities to experience remote, natural

settings would be degraded by surface and vegetative changes and structures in these areas. Impacts would dissipate as users move away from the facility area.

Management of cultural resources would result in positive impacts for most visitors by the addition of approximately 18,710 acres of ACECs. These designations would enhance protection of sensitive values in these areas.

Wildlife management under Alternative 2 would increase hunting and viewing recreation opportunities, creating positive impacts for these users.

Riparian management, specifically the Virgin River Corridor ACEC designation, would positively impact recreational settings. Ensuring public access, improving the riparian setting, and making the campground available to a wider range of users would improve the variety of recreational opportunities taking place on 8,100 acres along the river. Limiting OHV opportunities to designated roads and trails would negatively impact recreation opportunities associated with motorized vehicles.

Fuelwood cutting would compromise other forms of nonmotorized recreation such as hiking, backpacking, or nature study. Greater emphasis would be placed on woodlands management in activity plans. This could contribute significantly to preservation of natural settings and associated opportunities.

For the life of this plan selective ponderosa pine thinning, disease control and prescribed burns would have adverse impact to users seeking remote alpine and semi-primitive experiences in these areas. Indirect impacts of thinning operations such as increased access would also compromise these uses.

OHV opportunities would be eliminated from 10,700 acres along the Marble Canyon rim and 20,800 acres in the Beaver Dam ACEC. OHV opportunities would be limited to designated roads and trails on 4,200 acres of *P. sileri* habitat in the Johnson Spring, Lost Spring Mountain, and Moonshine Ridge areas.

Greater emphasis would be placed on protection of special scenic values and remoteness in managing oil and gas leasing and mineral exploration in B areas. Ultimately this would enhance abilities to maintain a variety of opportunities in semi-primitive setting in the immediate area of these impacts. Indirect impacts associated with haul road development on recreational settings and associated opportunities would most likely continue throughout the life of the plan but eventually would be eliminated through mitigation and reclamation.

More restrictive management of OHV would result in enhanced recreational opportunities for most users seeking experiences that tend towards the semi-primitive and non-motorized end of the recreation spectrum. In addition, there would be designated open OHV areas that would meet the needs of users near growing communities.

Recreational opportunities such as rafting, kayaking, and nature study would be enhanced in the lower Virgin River area under interim management guidelines effective during suitability studies for potential designation as a Wild and Scenic River. River access and improvements to areas classified as recreational would be evaluated and mitigated in accordance with BLM policies. The Virgin River Corridor ACEC, designated as VRM class I, may enhance recreational settings by providing management guidelines for mitigation of visual contrast of proposed improvements. Beneficial impacts associated with Wild and Scenic River designations on the Paria and Virgin Rivers would protect and enhance existing remote, backcountry recreational opportunities associated with these areas.

IMPACTS TO VISUAL RESOURCES

FROM LANDS

- Land Ownership Adjustments

Land transfers to other ownership under this alternative could have adverse impacts on visual resources on 17,170 acres. In those areas R&PP grants or exchanges could result in land development, structures, or surface disturbances that moderately contrast with existing visual quality.

Additionally, these lands would no longer be subject to visual resource management objectives, as they would pass out of federal ownership.

Implementation of this Alternative would result in acquisition of 157,300 acres of state and private lands. Attempts would also be made to acquire high value riparian areas. Impacts resulting from these acquisitions would be moderately positive for visual resources in the district, as they would be managed under visual resource management guidelines and objectives. Future development activities would be mitigated to reduce visual impacts by reducing contrasts to blend with the basic form, line, color and texture of the affected landscape. This would be done concurrently during the NEPA process, when proposed disturbing activities would be analyzed.

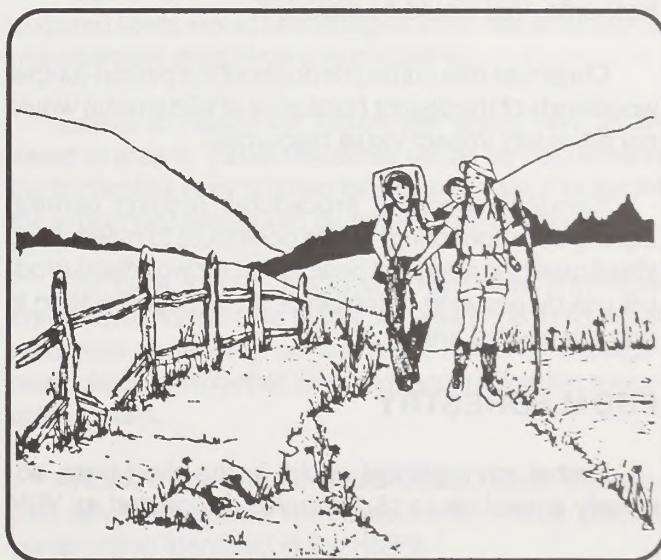
- Airports

Implementation of Alternative 2 would result in continued administration of existing airports. New requests would be considered only in area A. Colorado City airport would be expanded in coordination with ADOT and the FAA.

Under this alternative, visual resources would be degraded in the immediate area of such proposals. Permanent changes to the basic elements of form, line, color or texture would occur, therefore, VRM mitigation measures would not be available to reduce these impacts. Realistically, few proposals are expected throughout the life of the plan, so moderate to highly adverse impacts to VRM are not expected to occur.

- Right-of-Way Corridors

Designating an additional right-of-way corridor via the Lime Kiln/Rosy Canyon route could have moderate to highly adverse impacts to visual resources along a 70-mile strip depending on the nature of the use in the corridor. An underground line and the associated maintenance road would produce changes in color and texture that would be moderately adverse. An above-ground electric transmission line and its maintenance road would produce changes in line, color and texture that would range from moderate to highly adverse, depending on the size of the line and the kind of mitigation employed. Adverse impacts would affect 276,000 acres of class I, 763,000 acres of class II, 528,000 acres of class III and 1,556,000 acres of class IV areas. The significance of the impacts would vary with the VRM class, with class I being most adversely affected and class IV, the least.



FROM WILDLIFE

Implementation of this alternative is not anticipated to have significant adverse impacts to the visual resources on the district as a whole. However, minor site-specific impacts could occur as a result of construction of various projects identified in HMP's. Such impacts can usually be mitigated to acceptable levels of contrast, using basic visual resource management techniques. Mitigation of site specific impacts would occur during the NEPA process.

FROM RIPARIAN

Designating 8,100 acres as VRM class I in the Virgin River Corridor ACEC would have a moderately beneficial impact on visual resources by ensuring that the existing scenic quality along the river would not be compromised.

FROM WOODLANDS

Green fuelwood cutting on up to 312,000 acres and cutting of dead and down wood throughout the Shivwits Resource Area would eventually change the existing form, line, color and texture in the cutting areas due to the removal of trees. The visual contrast brought about by such change would primarily impact VRM class III and IV areas. The expected contrasts would not be significant in these classes--where visual change and noticeability are generally more acceptable. However, any such change in class II areas could adversely impact visual resources to a moderate degree. Management of travel corridors along primary travel routes in the district would benefit visual resources by ensuring that fuelwood cutting areas remain outside of the corridors identified for these routes. This would have a greater beneficial impact than current management, since primary travel routes in the Shivwits Resource Area would be included.

Christmas tree cutting throughout the pinyon-juniper woodlands of the district (exclusive of wilderness) would not adversely impact visual resources.

Standard operating procedures (issuing permits, signing and monitoring) would contribute to maintaining visual quality in areas not designated for woodland product use by ensuring compliance on fuelwood cutting in only designated areas.

FROM FORESTRY

Timber management could, in the short term, adversely impact up to 15,200 acres designated as VRM

Class II areas in the Uinkaret Mountains, the Parashant area and on Black Rock Mountain. Mitigation would offset much of the visual changes that would occur, however, upgraded roads and general loss of existing trees (even in selective thinning) would remain as slight to moderate contrasts with the existing visual settings.

In the long term, Category C forest management could moderately benefit visual quality. Enhancing forest condition or ecological diversity would create greater vegetative variety in areas that are currently stagnating or vegetatively monotypic.

FROM TRANSPORTATION

Implementation of Alternative 2 would result in maintenance of existing access and new access where needed to support resource management programs in area A. No permanent roads would be allowed in area B. However, realignment of the Arkansas Ranch Road would be allowed.

During the life of the plan, relatively few new roads are anticipated to be necessary for resource management needs in area A. Those few impacts that could result are anticipated to be relatively low, and mitigation is available to reduce visual contrast associated with access development. Overall, impacts to area A are anticipated to be low.

Impacts from this alternative to area B are anticipated to be moderately negative, as these areas are recognized as having sensitive resource values. However, since no permanent access would be allowed, negative impacts to visual resources would be considered temporary, and no long-term or irretrievable impacts would occur. No permanent changes in social settings or the remoteness criteria in this area would occur and the natural setting as it is now would ultimately be maintained

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

The locatable mineral resource mining and exploration impacts are projected to be identical to those described in Alternative 1 with the following exceptions.

Area B could incur moderately adverse impacts during mining and exploration operations. Haul roads or powerline development associated with mining activities would also affect area B. These ancillary activities would create visual contrasts in the VRM classes. As a result of increased management focus and attention, however,

high value scenic areas in area B would be subject to special stipulations and mitigation designed to protect the scenic quality.

This alternative would cause beneficial impacts to visual resources in certain areas by designating the Virgin River Gorge, Kanab Creek and Grama Canyon as no surface occupancy to leasable minerals. No surface occupancy on slopes of greater than 30 percent for Moccasin Mountain, Hurricane Cliffs, Upper and Lower Grand Wash Cliffs, Dansil, Andrus, and Parashant Canyons would also benefit visual resources. There could be low to moderate adverse impacts to visual resources in other areas where no special stipulations exist to protect scenic values. Reclamation would heal scars with time.

FROM RECREATION

Recreation management under Alternative 2 would focus on maintaining and/or enhancing a variety of physical and social settings present in the district. As such, management of the particular details of the physical setting, i.e. the noticeability of developments and other man-induced change, would be a more important consideration in day-to-day management. Subsequently, visual resources, as a component of physical settings, would receive greater management attention than under current management, which could contribute to the long term maintenance of visual quality.

Management prescriptions proposed for the Parashant and Mt. Trumbull RCAs as well as the Canyons and Plateaus of the Paria SRMA would significantly benefit the maintenance of visual quality in these areas by virtue of the constraints placed on development.

FROM WILD & SCENIC RIVERS

The Virgin River from the campground to the Nevada state line has been proposed for study as recreational under the provisions of the Wild and Scenic River Act. Interim management guidelines allow for review of proposed improvements and increased accessibility to the river. Developments, even with mitigation would fail to meet objectives for VRM class I areas. Developments may impact the form, line, color, and texture on site, and may eventually require a change in VRM classification.

FROM OHV DESIGNATIONS

The districtwide OHV designations proposed in the preferred alternative would provide greater protection to visual quality on 24,400 acres "closed" to OHV use (in addition to 265,600 acres already closed by wilderness).

The remaining land is either "limited to existing roads and trails" (1,913,000 acres), "limited to designated roads and trails" (610,000 acres) or "open" (1,400 acres). The designations would contribute to the protection of visual quality by directing OHV use to roads, trails and open areas rather than allowing indiscriminate off-road activity. Such designations contribute to the protection of visual resources by eliminating OHV use in off-road areas as one possible source of visual contrast.

Visual quality on public lands in the Fredonia open area would be highly impacted by intensive use, however, by providing open areas, the potential for impacts to visual resources on adjacent lands could decrease to a moderate degree.

FROM VRM

Designation of 751,400 additional acres as VRM class I and II over those described under current management would enhance the scenic quality of these areas. Management focus would be towards preserving scenic values and monitoring visually sensitive areas with specific guidelines for mitigation. Travel corridors would be managed as VRM class II and would be afforded a greater degree of protection from unsightly changes.

CONCLUSIONS

Land transfers would result in 17,170 acres that would not be managed under VRM objectives. Adverse impacts to visual resources would occur when these areas are transferred for development purposes. Positive impacts could occur if transfers were to result in a R&PP grant for the development of a park for recreation.

Acquisitions would result in beneficial impacts as acquired lands would be managed under visual resource management objectives and guidelines.

Grants or leases for airport use would only be allowed in area A. Visual resources would be degraded in the immediate area of these facilities. No such requests for airport facilities would be considered in area B.

The Lime Kiln/Rosy Canyon right-of-way corridor could have moderate to highly adverse impacts to visual resources depending on the visual resource management class, sensitivities involved, and mitigation measures applied.

Wildlife management would create minor, site-specific adverse impacts associated with limited project construction identified in the HMPs.

CHAPTER IV- ENVIRONMENTAL CONSEQUENCES

A class I VRM designation in the Virgin River Corridor ACEC would have beneficial impacts on 8,100 acres by ensuring that the existing scenic quality be maintained.

The Virgin River Corridor ACEC could be impacted by developments in segments classified as recreational under the provisions of the Wild and Scenic Rivers Act. Significant developments could require site-specific changes to VRM classifications. The 751,400 additional acres added to the VRM classes I and II would afford greater protection of scenic values than existing VRM inventories described in Alternative 1.

Forest management would improve the diversity of vegetation and health of the ponderosa pine, consequently enhancing visual quality.

Transportation management would create only minor adverse impacts to visual resources in area A given the few roads anticipated to be necessary for resource management. Impacts to area B as a result of road construction would be moderately adverse given the higher scenic values of these areas, however, only temporary roads would be allowed.

High quality scenic values would be maintained by use of no surface occupancy stipulations in leases and authorizations. Visual resource management will be enhanced as more acres will be placed in higher scenic and sensitivity classes.

IMPACTS TO WILDERNESS

FROM LANDS

- Communication Sites

Implementation of Alternative 2 would disallow expansion of the Black Rock Mountain communication site and establish a new communication site on Seegmiller Mountain. The presence of the Black Rock Mountain communication site would continue to moderately impact the opportunity to experience the natural settings in the area. These adverse impacts dissipate quickly as the user moves away from the facility. Alternative 2 would prevent further impact to wilderness values in the Black Rock Mountain area of the Paiute Wilderness Area.

FROM WILDLIFE

The removal of the bighorn sheep enclosure in the Paiute Wilderness will have short term adverse impacts

during the removal, but the long term impacts would enhance the natural setting and visual resources in the wilderness.

FROM WILD & SCENIC RIVERS

A portion of the Paria River has been identified as suitable for designation as a Wild and Scenic River. Virgin River segments eligible for study have been assigned potential classifications of wild, scenic, and/or recreational (Appendix 21). Eligibility for designation or study places these rivers under BLM provisions for interim management. Under these provisions, management would provide greater protection and, where possible, enhancement of outstanding and remarkable river values. The free-flowing characteristics of the river segment would not be modified. Designation would provide long-term benefits to wilderness.

CONCLUSION

Not allowing expansion of the Black Rock Mountain communication site, removal of the bighorn sheep enclosure, and designation of Paria and Virgin rivers as wild and scenic would provide long term benefits to wilderness.

IMPACTS TO TRANSPORTATION/ACCESS

FROM ACQUISITIONS

Acquisition of up to 147,600 acres of state land and 9,700 acres of private land would eliminate the need for easement acquisitions and would have both short and long term beneficial impacts.

FROM CULTURAL RESOURCES

Under this alternative, selected roads within areas designated as ACECs may be either closed, or use limited to designated roads and trails to protect cultural values. This could adversely impact the public who may desire to travel into or through one of these areas.

FROM SPECIAL STATUS SPECIES

Under this alternative, selected roads within areas designated as ACECs may be either closed, or limited to designated roads and trails to protect special status species. This could adversely impact the public who may desire to travel into or through one of these areas.

FROM TRANSPORTATION

Under Alternative 2, new permanent roads would not be allowed to help maintain the naturalness and remoteness. A new road may be allowed for a particular project, but when the project is completed, the road would be closed and rehabilitated. Other roads may be closed that are not needed for resource management causing an adverse impact to access.

Acquisition of easements (Appendix 24) across private or state lands would gain legal access on roads, creating a positive impact.

FROM RECREATION

Under Alternative 2, access within both the Mt. Trumbull and Parashant RCAs and Paria Plateau SRMA would be limited to designated roads and trails. For those visitors who like additional flexibility to use OHVs off the designated roads, there could be an adverse impact. Permanent new roads would not be allowed causing further restrictions for some users.

FROM OHV DESIGNATIONS

Designating the entire district as either open, limited to existing roads and trails or to designated roads and trails, or closed would place new restrictions on access and adversely impact OHV users.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Impacts to transportation and access from mineral resource exploration and development would be the same as outlined under Alternative 1, except new roads and improved access would be managed according to Alternative 2 objectives. All newly constructed access would be terminated and reclaimed where no longer needed.

CONCLUSION

Under this alternative, access to certain areas within the district may be restricted more than with Alternative 1. Off highway vehicle designation, Resource Conservation Areas, Special Recreation Management Areas, and Areas of Critical Environmental Concern would all contribute to further restricting vehicle use causing some negative impacts. Newly constructed permanent access would not be allowed and some existing roads may be closed, causing a negative impact to access, but other

impacts may be beneficial or adverse depending on objectives for a given area.

Acquisition of state and private lands along with other identified easements would benefit access on many important roads where legal access does not occur at present.

IMPACTS TO SOCIO-ECONOMIC RESOURCES

FROM LANDS

- Land Ownership Adjustments

Land disposals under Alternative 2 could result in transfer of 4,070 acres of public lands out of federal ownership. If these lands were sold rather than exchanged, the sale of these lands would be a positive economic impact to the counties by increasing their tax base. The sale would also generate revenue for the federal government.

These same 4,070 acres plus an additional 13,100 acres would also be available for exchange or conveyance at low cost to cities or counties under the Recreation and Public Purposes Act if a public interest is shown. This act allows local governments to purchase or lease lands at a very reasonable cost if for a public purpose. Exchanges are also required to be in the public interest. A beneficial economic or social impact would be realized by these disposals. Site-specific environmental assessments (EAs) would determine specific impacts.

Acquisition of 147,600 acres of state land and 9,700 acres of private land including the subsurface estate where BLM manages the surface would create a more solid block of public lands for the BLM to manage. Both economically and socially this would be a beneficial impact due to reduced management costs. These lands could also be opened to development under the mineral location and leasing laws possibly creating a beneficial economic impact to both the public and federal government. A loss of tax base when private land is acquired would adversely impact the counties. Site-specific Notices of Realty Actions (NORAs) and EAs would determine specific impacts.

- Communication Sites

By encouraging new communication sites on Seegmiller Mountain and not allowing new sites on Black Rock or Moccasin Mountains, a company desiring a communication site may need to spend more on access

to Seegmiller Mountain to obtain the same or less communication coverage as they possibly could obtain on Black Rock Mountain. This could be an adverse economic impact. Any user requiring electric power would benefit from the Seegmiller location since power is available in much closer proximity.

- Rights-of-Way Corridors

The designation of right-of-way corridors across the district would have economical and social positive impacts. Economically, the right-of-way corridors would be designated by this RMP/EIS and could save the cost of extensive environmental assessment and detailed environmental impact statements should a proposal be made. Socially, the time saved for this assessment (approximately one year) would be beneficial to the company applying for the right-of-way, the public and the BLM.

FROM CULTURAL RESOURCES

Designation of 227,000 acres of the Plateaus and Canyons of the Paria as an SRMA and 9,800 acres of Lost Spring Mountain and 5,500 acres of Yellowstone Mesa (Moonshine) as Areas of Critical Environmental Concern would close these areas to post cutting and firewood gathering. Since these areas are currently used for this purpose, other possibly more remote areas would need to be utilized, creating an adverse economic and social impact to the public. A proposed airport in the Ferry Swale area would not be allowed under this alternative, creating additional costs and difficulty for the developers to find another site.

Off-highway vehicle use would be limited within the Canyons and Plateaus of the Paria SRMA as it would be in the ACECs and RCAs. This restriction would be an adverse social impact to motorized recreation users.



FROM SPECIAL STATUS ANIMALS

Prescriptions for ACECs which limit land actions such as disposals, rights-of-way, and exchanges in the Littlefield/Beaver Dam area for the protection of the desert tortoise, riparian habitat, and the woundfin minnow could have an adverse social and economic impact to the growth potential of the area. Community expansion could be restricted and made more expensive due to the tortoise recovery needs, ACEC designations, and management prescriptions.

FROM WOODLANDS

The designation of cutting areas for commercial and personal firewood would have a positive economic and social impact. These areas would be specially selected for their tree size, road conditions and distance from communities and paved roads. Some areas currently used by woodcutters in Lost Spring Mountain, Yellowstone Mesa, and Paria Plateau would be closed to such uses when designated as ACECs or SRMAs. The proposed woodcutting areas selected to replace these areas in this alternative are further from communities. This would be an adverse economic impact to these people.

Designations of personal and commercial cutting areas will require commercial cutters to travel further and incur more expense to harvest products. Personal users would not have to compete with commercial harvesters for products closer to communities.

FROM FORESTRY

Under this Alternative, harvest of ponderosa pine would not be allowed except for the enhancement of other uses. There would be a potential adverse economic impact to a company who would like to harvest the trees for lumber and other forest products. Without the harvest, positive impacts could be realized by recreation users.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Socio-economic impacts from locatable mineral exploration and development are identical to those described in Alternative 1.

Guidelines could create an adverse economic impact to mineral development in area B through requiring a higher standard of reclamation. ACEC designations would also raise costs by requiring a plan of operations for all disturbance resulting from operations greater than

casual use. Areas closed to OHV use could also create negative economic impacts.

Potential positive socio-economic impacts of oil and gas leasing or potential development would slightly diminish based on seasonal and surface occupancy restrictions. Exploration or production would be more costly in the restricted areas. Marginal exploration targets resources may not be fully explored.

Meeting area B guidelines and ACEC management prescriptions could limit the disposal of mineral materials from desirable locations near projects. If this were to occur, a negative economic impact could be placed on the applicant by requiring additional hauling distance for material.

FROM RECREATION

Under Alternative 2, longer term camping would be allowed within the Virgin River Campground. The Campground is located within the Virgin River ACEC and would provide for this special type of visitor use. This would be a beneficial social impact to winter visitors who would like to stay longer than the 14 day limit and at the same time permit better utilization of the campground facilities.

FROM SPECIAL DESIGNATIONS

Designating the Parashant area as a Resource Conservation Area would be a beneficial social and economic impact. An RCA would provide for a variety of multiple-uses while insuring that the natural values are not impaired. Allowing the area to be grazed by a permittee who's allotment needs rest would be beneficial to the permittee by having a place to put their livestock and also hasten meeting vegetation management objectives for other areas on the Arizona Strip.

Under this alternative, timber harvest to meet lumber objectives would not be allowed in the Mt. Trumbull RCA creating a negative economic impact on potential harvest and sale of forest products.

FROM OHV DESIGNATIONS

Designating the entire district as either open, limited to designated roads and trails or to existing roads and trails, or closed, would place new restrictions on OHV enthusiasts. Many areas used in the past as open or limited to existing roads and trails could be further restricted making them unavailable for use by these publics. An adverse social impact would result from these restrictions.

CONCLUSION

Certain identified lands could be transferred at low cost to city or county governments under the Recreation and Public Purposes Act for a public purpose and provide public benefits.

Acquisition of state and private lands would provide improved management of public lands and enhance resource values.

Restricting communication sites on Black Rock Mountain could cause additional costs and limit communication coverage in some areas.

Designating a one mile right-of-way corridor across the majority of the district would save time and money for the public and the BLM in processing applications because analysis of the corridor would have been covered in this RMP/EIS. Adverse economic impacts could result from the added cost to analyze, construct and maintain a right-of-way through desert tortoise habitat where a corridor would not be designated.

Designating of certain areas as SRMAs, RCAs, and ACECs could restrict timber harvest, firewood gathering, and post cutting as well as restricting OHV use creating an economic hardship. Socially, the public could benefit through additional resource protection and multiple-use.

To protect the desert tortoise, woundfin minnow, and riparian habitat, certain realty and minerals actions may be limited or restricted in the Littlefield/Beaver Dam area causing an adverse social and economic impact.

Certain areas may be designated for commercial and personal firewood and post cutting based on distance and condition of roads from communities creating a beneficial impact. Commercial cutters would incur more expense to travel to designated commercial cutting areas.

Harvest of ponderosa pine would not be allowed and the potential for economic benefits of timber harvest foregone.

Guidelines in B areas could limit the sale of mineral materials from desirable locations creating a moderate negative economic impact.

Restrictions brought about by area B guidelines, ACECs, and OHV designations could add higher costs to exploration and mining of locatable minerals.

CHAPTER IV- ENVIRONMENTAL CONSEQUENCES

The Virgin River Campground would allow long term camping for winter visitors.

The Parashant RCA would provide resource protection while encouraging visitor use causing a positive social impact. Timber harvest for commercial purposes would not be allowed on the Mt. Trumbull RCA creating a negative economic impact.

Districtwide designations for OHV use would restrict OHV enthusiasts to certain areas and cause a negative social impact.

CUMULATIVE IMPACTS

This section addresses the degree, and extent of the cumulative impacts on the physical, biological, and socio-economic environment. Cumulative impacts include the impact on the environment which results from the incremental changes from the various actions when added to other past, present and reasonably foreseeable changes. Cumulative impacts can also result from individually minor, but collectively significant actions taking place over a period of time.

REASONABLY FORESEEABLE IMPACTS (1990-2005)

Reasonably foreseeable impacts are those impacts anticipated to occur if Alternative 2 is chosen as the management strategy. Table III-32 describes the cumulative surface disturbance changes from 1976-1989 and represent the baseline condition existing within the district. Alternative 2 reasonably foreseeable impacts are added to the changes described in Chapter III (cumulative change). To facilitate this analysis, all environmental parameters are grouped into four categories; physical (surface disturbance), biological, remoteness (recreation settings and experience opportunities), and socio-economic.

PHYSICAL COMPONENT

Table IV-4 represents an estimate of past changes (1976-1989) and reasonable foreseeable impacts of each alternative which could occur in the next 15 years depending on which alternative is selected as the management strategy.

Overall, a total of 63,665 acres could undergo some degree of surface impact. The majority (91 percent) of surface disturbance would involve land treatments designed to enhance watershed, wildlife and range conditions, and harvest of woodland products and would only

cause short-term temporary change to the surface. Five percent or 3,080 acres of the surface change could result in a permanent commitment of resources. These impacts would be due to land developments and agriculture following transfer to private ownership, roads, rangeland improvements, utilities, rights-of-way (R/W), leases, recreation facilities, and grants.

Impacts from management of existing watershed, wildlife habitat, and livestock grazing activity plans and woodland products and transportation programs would be the same as or similar to those described under Alternative 1.

Management of the lands and minerals programs could result in an estimated 4,500 acres of surface impact. Approximately 2,650 acres are considered long-term and permanent impacts resulting from lands actions (land developments and agriculture following transfer to private ownership, and R/W and leases). Other significant actions in the lands program could include: (1) acquisition of 147,600 acres of State of Arizona land through exchange, (2) establishment of a R/W planning corridor along the existing Navajo- McCullough 500 KV powerline and via the Lime Kiln/Rosy Canyon route, (3) transfer of 4,070 acres to private ownership by sale or exchange and transfer of 13,100 acres to private ownership through exchange only, (4) processing of land use authorizations for R/W, leases, permits, etc., communications sites, and Recreation and Public Purposes Act applications from governmental or nonprofit entities for public parks and other public purposes, (5) designate communication site on Black Rock Mountain, (6) making lands available for the Colorado City airport and continuing to work with the City of Page to consider and evaluate possible airport sites to meet future community needs, and acquisition of subsurface estate where BLM manages the surface. Changes in the physical environment from the programs would be minor with the exception of the non-designation of right-of-way corridors in desert tortoise habitat. While impacts to the desert tortoise could be positive, impacts to visual resources and socio/economic resources could be adverse.

The impacts from the minerals program would be the same or similar to those described in Alternative 1 with the following changes. ACEC designations, OHV closed areas and no surface occupancy and seasonal restrictions on leasable minerals could have negative effects on mineral resource development depending on location and timing of proposed mineral activities. The ACEC designations and proposed management prescriptions do not preclude locatable or leasable mineral development, but requires the filing and approval of a plan of operations for any exploration or development activities

exceeding casual use or the use of a motorized vehicle in a closed area. ACECs would be closed to mineral material disposals. Leasable mineral (oil and gas) activities could be impacted by no surface occupancy restrictions designed to protect visual resources and seasonal restrictions for the protection of bighorn sheep and peregrine falcon.

Beneficial impacts from the long term protection of priority cultural resources would occur from ACEC, other special management areas, OHV and wood cutting area designations.

BIOLOGICAL COMPONENT

Actions under the existing MFPs for development and implementation of wildlife habitat, watershed, and livestock grazing management plans would continue (Table II-1). The plans are designed to reach objectives specific to the plan area and involve rangeland improvements for wildlife habitat, watershed, and livestock grazing and management actions to maintain or improve rangeland conditions.

Impacts from management of watershed, wildlife habitat, livestock grazing, cultural resource, recreation, minerals and woodland products programs would be the same as or similar to those described under Alternative 1.

Beneficial impacts to special status species would occur from the ACEC and OHV designations and seasonal lease stipulations for oil and gas. Special status species that would benefit include Siler and Brady pin-cushion cactus, woundfin minnow, desert tortoise, and peregrine falcon. Riparian vegetation would benefit from the Virgin River ACEC, land acquisitions, and OHV designations.

Impacts which could cause a long term decrease in biological diversity would be related to lands program actions (land developments and agriculture following transfer to private ownership, and rights-of-way and leases), permanent rangeland improvements, recreation facilities, and BLM transportation system upgrades which eliminate vegetation, wildlife or their interactions. Approximately five percent of the total impacts (3,080 acres) would be considered to be a permanent commitment of resources. Wildlife and vegetation would receive moderate, negative impacts of both temporary and permanent duration. Activities associated with lands program could impact about 2,650 acres of wildlife habitat and vegetation in order to facilitate growth and expansion of local communities or to provide for other services.

REMOTENESS COMPONENT

The designation of ACECs, establishment of SRMAs and RCAs, designation of areas closed to OHV and limited to designated roads and trails, area B guidelines, and the interim management of two potential wild and scenic rivers would contribute beneficial impacts to "remoteness" and recreation management in the district.

Impacts on remoteness and recreation from management of watershed, wildlife habitat, livestock grazing, wilderness, woodland products, and minerals programs would be the same or similar as described under Alternative 1.

Visual resources would have long term beneficial impacts from the Virgin River ACEC by ensuring maintenance of scenic qualities. No surface occupancy lease stipulations and area B guidelines would have long term benefits for visual resources. Long term adverse visual resource impacts from the ROW corridor could occur depending on location.

The gradual increase in the region's population, the amount of leisure time, and the improved recreation vehicles would continue to impact remoteness. The more visitors on the district the less likely is the opportunity to experience remoteness. This factor is one of the most important impacts on remoteness. OHV activities would be adversely impacted by closures and limitation to designated roads and trails in ACECs.

Generally, "remoteness management" under Alternative 2 would moderately change current management's general approach to one focused on experience opportunities and settings. Thus, in the long run, such management could be more responsive to changing visitor needs and more custodial of the settings in which those needs are met.

SOCIO/ECONOMIC COMPONENT

Population:

Under Alternative 2, about 4,070 acres of land would be available for exchange, sale, or R&PP lease/sale and an additional 13,100 acres would be available for exchange or R&PP lease/sale. It is not expected that all of the identified lands would be transferred out of federal ownership as exchange would be first priority. The acreage identified for this purpose would accommodate a wide range of uses and foster good community planning. All lands identified as available for this purpose are located in the vicinity of existing communities.

Income:

Under Alternative 2, direct impacts to income types or per capita income within the local communities are not expected. A small amount of new revenue may be generated in the service sector related to tourism as a result of the SRMA and RCA designations. These impacts are not expected to be significant, however, as most tourism is expected to remain associated with the Grand Canyon and Lake Powell.

Social Perceptions:

Management under Alternative 2 would be more restrictive than under current management. Under the preferred alternative, special management areas would be established and management prescriptions would benefit the preservation of natural values and remoteness. Depending upon the particular use, implementation of Alternative 2 would be seen as either adverse or beneficial to the user or user group. Area B guidelines benefit the preservation of the feeling of remoteness and naturalness while providing for the use and development of natural resources in the area. In general, most people feel that the remoteness character of the district should be maintained. However, many local users feel no broad restrictions are needed in order to protect the identified resources within the ACECs or feeling of remoteness or naturalness. Other groups and individuals perceive that threats to the identified resources are greater and that a greater level of control or restriction is needed in order to protect these resources.



IMPACTS OF ALTERNATIVE 3

IMPACTS TO LAND RESOURCES

FROM LANDS

- Ownership Adjustments

Transfer of 15,010 acres for community needs (growth, expansion, etc.) would have very high benefits to local communities by ensuring future viability could be maintained. Public use opportunities on these lands would be foregone.

Acquisition of 171,000 acres of state and private land would result in a consolidated public land pattern. These impacts are the same as those identified under Alternative 2, except slightly more acreage would be acquired.

- Communication Sites

The impacts of this alternative are the same as those described under Alternative 2.

- Right-of-Way Corridors

The impacts of this alternative are the same as those described under Alternative 2.

- Airports

The impacts of this alternative are the same as those described under Alternative 2.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Implementation of Alternative 3 would result in identical impacts as described under Alternatives 1 and 2.

FROM SPECIES STATUS SPECIES

Retention of all federal essential desert tortoise habitat could limit the extent that local communities in the Littlefield/Beaver Dam and Mesquite areas could expand. This could be a significant impact due to the recent rapid growth of these communities.

CONCLUSIONS

Land disposals would ensure local communities can continue to expand. Special designations for sensitive resources or species may preclude expansion (in small areas) or prevent some land use authorizations if they are found to be incompatible with the purpose of designation. Designation of an additional right-of-way corridor would ensure that a suitable corridor exists for possible uses that would be considered incompatible with or unsuitable for placement in the existing corridor. Acquisitions are considered very beneficial because they can improve management efficiency. Designating a new communication facility on Seegmiller Mountain would provide for future regional and local communications needs and prevent further degradation of the sensitive Black Rock Mountain area.

IMPACTS TO MINERAL RESOURCES

FROM LANDS

- Ownership Adjustment

The transfer of up to 15,010 acres of public land could negatively impact the prospect of mineral development on these lands. The majority of the disposal lands are located in areas identified as having high potential for the occurrence of locatable minerals occurring in breccia pipes and moderate potential for oil and gas. Once these lands leave federal ownership and become developed through the building of structures, the likelihood of mineral exploration being conducted on the tracts is minimal. This would be the case even if the minerals were retained in federal ownership. Without the exploration, chances are very small that any mineral resources which may underlie the tract would be developed through the life of the plan.

Acquisition of 161,000 acres of state land could benefit mineral development. See analysis for Alternative 2.

- Withdrawal Revocation

Revocation of the Boulder Canyon and Turbinella-Hybrid Oak protective withdrawal would have a positive impact on the development of any leasable or locatable minerals as described in Alternative 1.

CHAPTER IV- ENVIRONMENTAL CONSEQUENCES

The revocation of the Vermillion Cliffs Natural Area withdrawal outside of the SRMA would encourage the exploration for and development of mineral resources which may underlie the tract. This area has a high potential for the occurrence of locatable mineral resources, specifically uranium.

The withdrawn area also contains mineral materials which may be of sufficient quality and quantity to make their extraction economic and desirable. While the withdrawal does not specifically segregate from mineral material disposals, it is district policy not to dispose of material from within the withdrawal. Revocation of the withdrawal would clear the way for the disposal of any mineral materials should a demand develop in this area.

FROM SPECIAL DESIGNATIONS

Under this alternative, all ACECs would be withdrawn from mineral location. The purpose for the withdrawals is to provide additional protection to cultural resources and endangered plants and animals. The withdrawals would have a negative impact on locatable mineral resource development in these areas through the prohibition of the location of any new mining claims. Any acreage not under location at the time of the withdrawal would not be available for locatable mineral location and development. Witch Pool, Johnson Spring, Moonshine Ridge, Lost Spring Mountain, Nampaweap, Fort Pierce and Little Black Mountain ACECs are all located in areas determined to have high potential for the occurrence of locatable minerals. Specifically, these tracts all lie in areas known to be highly favorable for the occurrence of uranium mineral resources contained in breccia pipes. In addition, Johnson Spring, Moonshine Ridge, and Lost Spring Mountain are located in areas of high favorability for the occurrence of uranium in sandstone bodies. The Beaver Dam ACEC lies in an area of moderate favorability for the occurrence of gold. The designation of an ACEC would require the submission of a plan of operation under the 43 CFR 3809 regulations for any activities exceeding casual use and proposed on mining claims located prior to the withdrawal. The filing of a plan of operation generally results in time delays and additional costs.

Fluid leasable mineral activities would not be permitted on the surface of any leases issued within the ACECs. This lease stipulation would again be implemented for the protection of cultural resources and special status species. The imposition of this stipulation could negatively impact oil and gas lease operations and operations proposed under 43 CFR 3150. Oil and gas could still be leased. Drilling and development, however, would have

to be conducted via directional drilling techniques. These techniques are costly in terms of both exploration and development dollars. Leases issued with stipulations of this nature are less likely to be explored due to the higher cost. Beaver Dam, Virgin River, Little Black Mountain, Johnson Spring, Moonshine Ridge and Lost Spring Mountain are located in areas of moderate potential for the occurrence for oil and gas while Witch Pool, Nampaweap, Paria Plateau and Marble Canyon are located in areas of low potential.

Mineral material disposals would be prohibited within the ACECs. Witch Pool, Nampaweap, Fort Pierce and Little Black Mountain are not located in areas of high potential for the occurrence of significant quantities of good quality mineral materials. The designation would have no significant adverse impact on the development of aggregate resources. Beaver Dam, Johnson Spring and Lost Spring Mountain are all located in areas of high potential for the occurrence of this resource and their designation would have a significant adverse impact on the development of aggregate resources. In the case of Moonshine Ridge and Virgin River ACECs, significant gravel resources are known to occur. Gravel on public land is a relatively scarce resource in this area and designation could have a significant adverse impact on the future development of aggregate used in Colorado City, Littlefield and Beaver Dam. One gravel source presently being used has been excluded from both ACECs, thus mitigating the adverse impact to the local users for the short term.

FROM OHV DESIGNATIONS

Designating more acreage as closed to OHV use would have a negative effect on the exploration for and development of all mineral resources in those areas. The impact would result from delays in exploration and development programs as a result of complying with plan approval process required to bring equipment into these areas.

All of the OHV closed areas are located in areas of moderate and high potential for the occurrence of locatable minerals. Two of these areas, Kanab Creek and Grama Canyon, are located in areas of not only high mineral potential, but also in areas where the exploration for and development of uranium mineral resources has been intense. Some of the closed areas (Moonshine Ridge, Lost Spring Mountain, Johnson Spring and Moccasin Mountain) are located in areas determined to have a high potential for the occurrence of uranium in the Chinle Formation. The Beaver Dam ACEC is located in an area with moderate potential for the occurrence of gold.

The closure of these areas would require the filing of a plan of operation for any activity which would use motorized vehicles as the form of access. This plan would require the preparation of an environmental assessment prior to its approval. This could result in a 30 to 90 day delay for each operation.

The limited OHV designations are not expected to significantly impact the development of oil and gas resources since mineral exploration is an exception to the limited designations.

FROM VISUAL RESOURCES

No surface occupancy would be allowed on any lease issued within the Virgin River Gorge, Kanab Creek or Grama Canyon. This restriction would be applied to protect visual resources in these canyons. The imposition of this stipulation could negatively impact oil and gas lease operations and operations conducted under 43 CFR 3150. Given the steep terrain in Kanab Creek and Gramma canyons and the limited access available in the canyon bottoms, this stipulation is not expected to have a significant impact on oil and gas exploration operations there. Furthermore, these areas have a low potential for the occurrence of oil and gas resources. The Virgin River Gorge has a moderate potential for the occurrence of these resources and the implementation of this stipulation would adversely impact oil and gas operations there.

Restrictions prohibiting surface occupancy on slopes of greater than 30 percent would be applied to Moccasin Mountain, the Hurricane Cliffs escarpment, Diamond Butte, the upper and lower Grand Wash Cliffs, Parashant, Andrus and Dansil canyons. These stipulations are designed to limit surface-disturbing activities which would cause a long term visual impact in these areas. The imposition of this stipulation could negatively impact oil and gas lease operations and operations conducted under 43 CFR 3150. Oil and gas could still be leased. Drilling and development, however, would have to be conducted via directional drilling techniques. These techniques are costly in both exploration and development. Leases issued with stipulations of this nature are less likely to be explored due to the higher cost. Portions of these areas are located in areas rated as having a moderate potential for the occurrence of oil and gas resources.

CONCLUSION

Implementation of this alternative would severely restrict or preclude mineral resource exploration and development in certain areas in order to exclusively protect or accommodate other nonmineral resources and uses. Land disposals would discourage mineral resource exploration in specific areas while land acquisitions would encourage exploration in others. Withdrawal revocations would encourage leasable mineral development on 4,863 acres of land with a moderate potential for the occurrence of oil and gas. These revocations would also encourage mineral exploration and development on small parcels of land in the Vermillion Cliffs area.

Mineral withdrawals within ACECs would encumber locatable mineral resource exploration and development through the prohibition of these activities on any acreage not claimed as of the date of the withdrawal. Delays resulting from required plan approval would also impact operations proposed on any claims which predate the withdrawal. The majority of ACEC proposals lie in areas of high potential for the occurrence of mineralized breccia pipes. The remainder of ACECs lie in areas of moderate potential for the occurrence of gold resources. Mineral material disposals would be prohibited in the ACECs. In the case of Moonshine Ridge, Johnson Spring and Lost Spring Mountain ACECs, this could impact the long term availability of aggregate needed by local communities.

OHV closures would also negatively impact the exploration for locatable mineral resources. In these areas, a plan would be required for any activity proposing to use motorized vehicles as a form of access. Impacts would result from delays required by the plan approval process. The majority of proposed closed areas are located in areas of high potential for the occurrence of locatable mineral resources, with the remainder located in areas of moderate potential.

The prohibition of surface occupancy in ACECs could adversely impact leasable mineral operations. The imposition of this stipulation could require off lease exploration and development.

Restrictions designed to protect visual resources would negatively impact leasable mineral operations through the prohibition of surface occupancy. This could require off lease exploration and development in these areas. Leases issued with stipulations of this nature are less likely to be developed due to the associated higher cost.

IMPACTS TO CULTURAL RESOURCES

FROM LANDS

Impacts under this alternative are the same as Alternative 2.

FROM SPECIAL DESIGNATIONS

Seven areas including 204,800 acres (Paria Plateau, Lost Spring Mountain, Moonshine Ridge, Johnson Spring, Little Black Mountain, Witch Pool, and Nampaweap) are proposed to be designated Areas of Critical Environmental Concern (ACEC) in areas of priority cultural resource values. Three areas encompassing 386,000 acres in the Parashant, Mt. Trumbull and Paria Plateau are proposed to be designated as Special Recreation Management Areas (SRMA). Four other areas (Beaver Dam, Virgin River Corridor, Fort Pierce, and Marble Canyon) totaling 48,000 acres would also be designated as ACECs which would afford additional protection to unknown cultural resource values. In these areas management prescriptions (Table II-2) would be implemented to protect and preserve archaeological resources, resulting in a long term beneficial impact. The areas of cultural priority would receive increased ranger patrols as part of the special designation management. The patrols would reduce vandalism, OHV activities and loss of context of cultural resources. Losses in the areas of cultural priority over the life of the plan would be low including natural losses to erosion. ACEC and SRMA designation would occur on 404,810 acres with benefits to cultural values.

FROM OHV DESIGNATIONS

Areas of cultural priority would be closed to OHVs or limited to designated roads, thus reducing and/or eliminating impacts from OHVs. Cultural resource loss to illegal OHV activity would be low over the life of the RMP at areas of cultural priority.

FROM WOODLANDS

Impacts under this alternative are the same as Alternative 2.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Under this alternative, cultural resources within ACECs would be afforded the highest level of protection available from impacts associated with mineral resource

exploration and development. Lands within the Paria Plateau, Johnson Spring, Lost Spring Mountain, Moonshine Ridge, Witch Pool, Nampaweap, and Little Black Mountain ACECs would be withdrawn from mineral entry. In addition, the Paria Plateau SRMA would be withdrawn. This would preclude any disturbance resulting from locatable mineral resource exploration or development on lands within the ACECs or SRMA not covered by mining claims as of the date of withdrawal.

Operations proposed on any claims located within the ACECs or SRMA prior to the date of withdrawal would be required to operate under an approved plan of operation. All of these areas, except Little Black Mountain ACEC and the Paria Plateau SRMA, would be closed to OHV use. A plan of operation would be required for any operation proposing to use motorized vehicles in closed areas. For the Paria Plateau SRMA, notices could still be submitted for operations submitted on any mining claims located prior to the withdrawal in areas outside of the ACEC. Within the Paria Plateau and Little Black Mountain ACECs, a plan of operation would be required for any activity exceeding casual use on mining claims located prior to the withdrawal. In cases where a plan of operation would be required, the impact to cultural resource management would be in the form of additional inventory and review time available to determine National Register eligibility and develop mitigation, if necessary.

Under this alternative, cultural resources within ACECs would be afforded the highest level of protection available from impacts associated with oil and gas resource exploration. Lands within the Paria Plateau, Johnson Spring, Lost Spring Mountain, Moonshine Ridge, Witch Pool, Nampaweap and Little Black Mountain ACECs would be available for lease subject to the no surface occupancy stipulation. This would provide a long term beneficial impact. This restriction would apply to operations conducted under both the 43 CFR 3150 and 3160 regulations. Imposition of this restriction would eliminate all surface disturbance associated with oil and gas exploration in the ACECs. Cultural resources within the remainder of the district would be afforded the same protection as outlined under Alternative 1.

CONCLUSION

Implementation of Alternative 3 would result in long term beneficial impacts to cultural resources. Priority cultural areas would be closed to mineral entry and subject to no surface occupancy lease stipulations. Damage due to OHV activities would also be very low. Cultural resource losses would primarily be limited to natural losses resulting from the weathering process and losses to vandalism.

IMPACTS TO SOIL, WATER AND AIR RESOURCES

FROM LANDS

Impacts from Alternative 3 are the same as those described under Alternative 2 except closing the airstrip at Poverty would decrease soil loss from both wind and water.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPEMENT

Adverse impacts to watershed resources from minerals activities under this alternative would potentially decrease due to 545,000 acres of mineral withdrawal and more restrictive management prescription for the areas receiving special management designations (Table II-2). Currently there are no locatable mineral activities in these areas and the probability of future activities is uncertain.

Total surface impacts to watershed from leasable mineral exploration and development would be the same as those described under Alternative 1, except the sensitive Fort Pierce watershed with its highly erosive saline soils. It would receive an ACEC designation allowing no surface occupancy lease stipulations assuring protection to these fragile soils.

Other ACECs and sensitive visual areas would benefit watershed with no surface occupancy lease stipulations. Lease stipulations protecting visual resources on slopes would provide long term beneficial impacts to watershed resources.

FROM WATERSHED

Expanding Fort Pierce ACEC to include watershed objectives would have a beneficial impact on 2,700 acres. Conducting an instream flow study on the Paria River would not have any immediate environmental impacts on watershed resources, however, establishing better baseline information should have beneficial impact for future management use.

FROM RIPARIAN

Impacts on watershed resources are the same as those described under Alternative 2 except increasing management attention of the Virgin River/Beaver Dam confluence area would have a beneficial impact to soil and water resources.

FROM FORESTRY/WOODLAND

Impacts on watershed resources would be minimal as described under Alternative 2.

FROM OHV DESIGNATIONS

Impacts to watershed resources would be the same as those described under Alternative 2 except they would be more beneficial as a result of having more areas designated in stricter categories (i.e. more limited to designated roads and trail categories).

FROM TRANSPORTATION

Impacts in watershed resources would be the same as those described under Alternative 2.

FROM FIRE

Impacts in watershed resources would be the same as those described under Alternative 1.

CONCLUSION

This alternative overall has more beneficial long term impacts to watershed resources due to more restrictive management from special management areas, closure of 545,000 acres to mineral entry, and more restrictive OHV designations.



Road damage at Bulrush Wash.

IMPACTS TO SPECIAL STATUS SPECIES

FROM LANDS

The proposed program and subsequent impacts for this alternative are essentially the same as Alternative 2 for land exchanges and R/W corridors. Approximately 600 less acres of class III desert tortoise habitat would be involved for potential exchange (900 acres north of I-15 and 530 acres south).

FROM WILDLIFE HABITAT MANAGEMENT

Program proposals and impacts are the same as Alternative 2.

FROM RIPARIAN

Program proposals and impacts would be the same as Alternative 2, with the exception of the Beaver Dam confluence area being managed as a riparian demonstration area. This could positively impact special status fish and peregrine falcon prey base.

FROM SPECIAL DESIGNATIONS

Under Alternative 3, 6,014 acres of Siler pincushion cactus and 15,500 acres of Brady pincushion cactus would be designated as ACECs. The Marble Canyon ACEC would include additional habitat of Fick pincushion cactus and a buffer zone around Brady pincushion cactus along the rims of Marble Canyon and lateral canyons. The management prescriptions (Table II-2) would be the same as Alternative 2 except that the ACECs would be closed to mineral location, OHVs and driving to overlooks at Marble Canyon. The area would be open to leasable minerals, but with a no surface occupancy stipulation. At Marble Canyon new water developments would be excluded within one mile of the ACEC boundary and roads within 1/4 mile of ACEC would be closed and rehabilitated. These actions would allow the endangered cacti to increase in number and area and would provide a long term beneficial impact to the species and its habitat.

Management and impacts on special status animals would be the same as Alternative 2 except that Beaver Dam ACEC would be closed to mineral entry. These actions would provide a long term beneficial impact for the desert tortoise.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Management actions and impacts would be the same as Alternative 2 except for the following.

ACECs for Siler and Brady pincushion cacti would be expanded to 6,014 and 15,500 acres respectively. Fick pincushion cactus would be included in Marble Canyon ACEC with Brady pincushion cactus. The ACECs for all special status species would be closed to mineral entry. This would have a long term beneficial impact to the special status cacti and the desert tortoise.

Management actions and impacts from leasable mineral resource exploration and development would be the same as Alternative 2 for ACECs except enlargement of the cacti ACECs and the no surface occupancy stipulations imposed on new oil and gas leases. This would afford special status species in ACECs full protection from oil and gas lease operations.

FROM OHV DESIGNATIONS

The management actions and impacts would be the same as Alternative 2 except that the special status plant species ACEC would be closed to OHV. This would afford additional protection and would provide a long term beneficial impact to the special status cacti.

CONCLUSION

The impacts of Alternative 3 would be essentially the same as Alternative 2 with the following exceptions.

The ACECs affecting special status species would all be closed to mineral entry and oil and gas leases would be subject to the no surface occupancy stipulation. OHV closed areas would be designated in the special status plant ACECs. These actions would provide additional protection to the special status species and would have a long term beneficial impact.

IMPACTS TO RIPARIAN AREAS

Table IV-3 shows impacts of alternatives on riparian areas.

FROM SPECIAL DESIGNATIONS

Impacts are the same as Alternative 2, except that under Alternative 3, riparian areas would receive more

protection as the entire Virgin River Corridor ACEC (8,100 acres) would be closed to mineral location. The riparian area, also, would be closed to OHVs. This would allow the area to improve and would be a long term beneficial impact.

FROM RIPARIAN

The Beaver Dam Confluence would be intensively managed as a riparian demonstration area and would provide a beneficial impact.

CONCLUSION

Impacts would be the same as Alternative 2, except the added beneficial impact of closure of the Virgin River Corridor ACEC to locatable mineral exploration and development and OHVs. Also the Beaver Dam Wash area would be managed as a Riparian Demonstration Area.

IMPACTS TO FOREST/WOODLAND RESOURCES

FROM SPECIAL DESIGNATIONS

Designation of Mt. Trumbull/Mt. Logan and Parashant areas as SRMAs would have a similar impact as described in Alternative 2; however, more emphasis would be placed on preservation of recreational values.

FROM FOREST AND WOODLAND MANAGEMENT

Same as Alternative 2.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Impacts to forestry/woodland resources from mineral resource exploration and development would be the same as outlined under Alternative 1 (current management).

CONCLUSION

Same as Alternative 2.

IMPACTS TO GRAZING MANAGEMENT

FROM LAND OWNERSHIP ADJUSTMENTS

Impacts are essentially the same as Alternative 2 even though 15,010 acres are proposed for transfer, a decrease of 2,170 acres. Approximately 750 AUMs, \$1,395 in grazing fee and \$698 in range betterment funds would be lost. Moderate negative impacts to rangeland resources would result from loss of grazing lands. Range improvements on disposal land owned by permittees would require salvage or reimbursement.

Benefits to be realized from land acquisitions are identical to those identified in Alternative 2. Acquisition of 161,000 acres of state land and 10,000 acres of private land would increase available forage from public lands by 8,550 AUMs. This could produce \$15,903 in increased grazing fee revenue and \$7,951 in range betterment funds annually. Management efficiency would be increased through elimination of need for state coordination and by elimination of exchange of use agreement.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Both positive and negative impacts could occur to livestock grazing from mineral development as described in Alternative 1.

FROM SPECIAL DESIGNATIONS

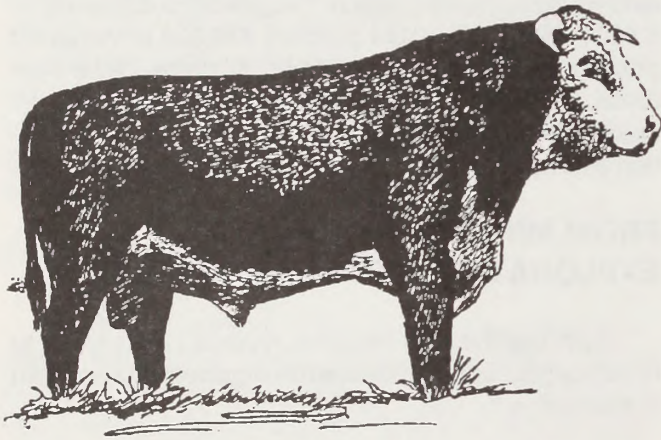
Negative impacts would occur in ACECs where opportunities for vegetative land treatments are not pursued. This represents a significant negative impact on the Paria Plateau where significant land treatment opportunities exist over a large area. SRMA designations would only have a minor negative impact on grazing due to the increased emphasis placed on recreation management. Grazing would continue with its associated management practices, but visual intrusions would be reduced and grazing conflicts with recreation users could increase.

Both beneficial and negative effects to the rangeland management program are expected from the Fort Pierce ACEC. This is a frail watershed area with sensitive erosive soils. Proper management is essential. Effective watershed management and resulting improved vegetation cover would positively impact rangeland management. However, short term restriction of livestock grazing may be necessary to achieve vegetation cover objectives.

CHAPTER IV- ENVIRONMENTAL CONSEQUENCES

The same positive impacts are expected to occur in the Parashant RCA as identified in Alternative 2. Rest from livestock grazing could be provided on allotments where needed by shifting livestock to the Parashant allotment. This would provide a desirable management option seldom available.

Management prescriptions for areas proposed for designation as ACECs or SRMAs would impose constraints upon rangeland resources through prohibiting vegetation treatment such as chaining, seeding or burning. Range improvements would not be allowed in close proximity of cultural sites and restricted to varying degrees in other ACEC management prescriptions.



FROM SPECIAL STATUS SPECIES

Management prescriptions from the Beaver Dam desert tortoise ACEC would continue and be consistent with the Rangewide Desert Tortoise Plan and the Endangered Species Act. The actions could place constraints on season of use, utilization levels, stocking rates and livestock management, including, limiting, precluding or deferring livestock use. Closing areas to OHV use could restrict grazing permittees from using motorized vehicles to gather cattle, distribute salt or inspect improvements. However, permission to use motorized vehicles can be obtained from the authorized officer on a case-by-case basis. This would impose a negative impact upon livestock grazing.

FROM RIPARIAN MANAGEMENT

Intensified management of riparian areas would have positive benefits to the rangeland resource as part of the multiple use values of these sites. Negative impacts would result to permittees, however, if livestock were excluded from grazing these areas. Including them into a properly designed grazing system which would protect riparian sites would be preferable to exclusion.

FROM TRANSPORTATION AND OHV DESIGNATIONS

The impacts of this alternative are similar to those described in Alternative 2. However, more lands would be placed in the closed category and be limited to designated roads and trails category and the overall level of impact would be increased.

CONCLUSIONS

Transfer of 15,010 acres of public land would have long term negative impacts through loss of approximately 750 AUMs, \$1,395 in grazing fees annually and \$698 in range betterment funds each year. Range improvements on disposed land owned by permittees would require salvage or reimbursement.

Acquisition of 161,000 acres of state land and 10,000 acres of private land would increase available forage from public lands by 8,550 AUMs. This could produce \$15,903 in increased grazing fee revenue and \$7,951 in range betterment funds annually. Management efficiency would be increased through elimination of need for state coordination and elimination of exchange of use agreement.

Excluding livestock from riparian areas would have a negative impact upon permittees should management prescriptions call for such action. Closing or restricting roads could adversely effect the rangeland management program both from an administrative standpoint and from the permittees perspective.

The Fort Pierce watershed ACEC could have long term grazing benefits through improved vegetative cover. However, restrictions on grazing may be necessary to achieve vegetation objectives.

Management prescriptions for the ACEC and other desert tortoise lands could restrict livestock grazing

seasons, levels and range improvement opportunities.

IMPACTS TO WILDLIFE RESOURCES

FROM LANDS

Land ownership adjustments would have a low impact on wildlife habitat. Exchanges would generally have a positive impact because larger acreage and better habitat is often acquired. Acquisition of land is beneficial to wildlife habitat because it generally reduces conflicting uses, facilitates more efficient management and provides a larger base of habitat that is manageable for the long term public benefit.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Wildlife resources and habitat would receive greater protection in ACEC areas because they would be closed to mineral development. In other areas wildlife habitat would be managed as outlined under Alternative 2 and have similar impacts. Exploration would increase the presence of human activity and could negatively impact certain wildlife species during critical reproductive periods. Oil and gas development would impact wildlife species during the construction phase. Adding protective stipulations to oil and gas leases would prevent negative impacts on bighorn sheep, as compared to the current lack of specific stipulations.

FROM WILDLIFE

Under this alternative, wildlife populations would naturally regulate themselves to be in balance with existing ecosystems. This would forego the opportunities to provide wildlife to more nearly meet the needs of the public and may result in population reductions for bighorn sheep and antelope without active management.

Removal of the bighorn sheep exclosure would forego any future use opportunities, but would substantially improve the naturalness of the Paiute Wilderness Area in its vicinity.

FROM SPECIAL STATUS SPECIES

Designation of the Beaver Dam Slope tortoise area as an ACEC with associated management would have a positive impact on all wildlife species that inhabit the area due to restrictions on surface-disturbing activities. Activities that contribute to the proliferation of predators may be curtailed as they affect the desert tortoise.

FROM RIPARIAN

Designating the Beaver Dam/Virgin River confluence as a riparian demonstration area would have a positive impact to wildlife species native to the Arizona riparian communities. Efforts would be undertaken to maximize riparian management including planting of trees, interpretive walkways and other demonstrations. District riparian management would maximize associated wildlife habitats and species and consequently, have a positive impact to wildlife values.

FROM WOODLANDS

This alternative would have the same impacts as discussed under Alternative 2. Positive impacts could be expected by preventing indiscriminate fuelwood gathering.

FROM FORESTRY

The same anticipated impacts would occur under this alternative as described in Alternative 2. Management under Category C "forest management for the enhancement of other uses" would provide the most benefit to wildlife resource values.

FROM SPECIAL DESIGNATIONS

This alternative would have a moderate overall positive impact; it would meet wildlife resource needs, and would provide wildlife opportunities for the public to enjoy. Additional human visitation may result from recreation management emphasis and cause disturbances to wildlife and habitat.

FROM OHV DESIGNATIONS

Restricting OHV travel to existing roads and trails or closed to OHVs would have a beneficial impact on wildlife species and habitat as described in Alternative 2. Under this alternative there would be no open areas on the district, further benefiting wildlife.

CONCLUSIONS

Overall impacts of land sales or exchanges are not significant. Acquisition of lands would have positive impacts by adding habitat of larger quantity and better quality.

CHAPTER IV- ENVIRONMENTAL CONSEQUENCES

Allowing natural processes to determine wildlife populations could have negative impacts on species such as antelope and bighorn sheep where long term viable populations have not yet been fully established and to the public, which has indicated a desire to see and harvest these species.

Positive influences could be expected from woodland management proposals. Management of ponderosa pine forests under this alternative would ensure continued quality wildlife habitat for those dependent species.

Adding specific protective stipulations to oil and gas leases would be a benefit to avoid habitat and animal disturbances.

Designation of the Parashant and Mt. Trumbull areas as SRMAs could result in adverse impacts to wildlife resource due to RCA designations and associated management prescriptions emphasizing recreation-oriented uses. Overall, however, positive impacts to wildlife would be expected from increased management attention resulting from the designation.

OHV designations would benefit wildlife species and habitat because use would be restricted to existing or designated roads and trails.

IMPACTS TO RECREATION RESOURCES

Management actions and impacts are similar or the same as Alternative 2, except as follows:

FROM LANDS

- Ownership Adjustments

Implementation of Alternative 3 could result in 15,010 acres of sales or exchanges shown to be in the public interest. As in the preferred alternative, certain recreational opportunities such as OHV use, sightseeing and gathering forest products, would be moderately impacted by the loss of public lands.

- Airports

Impacts to recreational resources and associated opportunities would be virtually the same as those described for Alternative 2 except that a small airstrip at

Poverty Flat would be closed. Intermittent impacts associated with operations at Poverty Flat airport would be negated.

- Communication Sites

Implementation of Alternative 3 would be the same as for Alternative 2, with the exception that no communication sites would be allowed on Moccasin Mountain or the Uinkaret Area. Impacts to backcountry recreational opportunities could be beneficial because additional construction and development for communication sites in these areas would be precluded and natural settings/remoteness would be maintained.

- Withdrawals

Implementation of Alternative 3 is the same as for Alternative 2, except for the additional withdrawal revocation of portions of the Vermillion Cliffs Natural Area outside of the proposed Paria Plateau Special Recreation Management Area (SRMA).

FROM CULTURAL RESOURCES

Implementation of Alternative 3 would result in designation of Paria Plateau as a SRMA which also contains an ACEC designed to protect cultural resources. Both would be withdrawn from mineral entry and material disposals would be precluded (Table II-2). Cultural resource ACEC designations (204,800 acres) would occur and be the same as those described in Alternative 2, except for Paria Plateau.

Impacts to recreational settings and backcountry opportunities such as hiking, sightseeing and exploring, would be moderately beneficial, due to more restrictive management of potential disturbing activities.

FROM RIPARIAN

With one exception, impacts to recreation from riparian management under Alternative 3 would be the same as under Alternative 2. The additional action of designating a riparian demonstration area within the Virgin River Corridor ACEC would have an adverse impact on visitor opportunities to study nature on hikes by eliminating public access to 120 acres of riparian area around the confluence of the Beaver Dam Wash and the Virgin River.

FROM SPECIAL STATUS SPECIES

The ACEC designations for special status plants (*P. sileri* and *P. bradyi*) and desert tortoise would result in 42,314 acres being designated "closed" to OHV use. These closures would eliminate OHV recreation opportunities on all special status species. The closed area in Alternative 3 would have moderate adverse impacts to motorized recreation opportunities since it would eliminate use on several popular access roads to view points on the rim of Marble Canyon. In addition, restriction to designated roads and trails in the Fort Pierce ACEC on *P. sileri* habitat could eliminate approximately 5.5 miles of wash bottom currently used as an alternate part of the Rhino Rally motorcycle race. These closures or restrictions on OHV opportunities would benefit those seeking recreation experiences away from OHV use areas. The Beaver Dam Slope ACEC (20,800 acres) for desert tortoise would be closed to OHVs.

FROM WATERSHED/SALINE SOILS

Expanding the Fort Pierce ACEC to include critical watershed area would eliminate OHV opportunities on 2,700 acres by designating the area closed to OHV use. Low to moderate adverse impacts would result to those seeking OHV experiences. These same closures or restrictions on OHV opportunities would benefit those seeking recreation experiences away from OHV use areas.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Under this Alternative, impacts to recreational resources are the same as those described in Alternative 2, except slightly larger acreages would be placed in area B. These areas would be subject to special mitigation/stipulation designed to prevent permanent adverse impacts to special scenic and backcountry values. This would be a more positive benefit for those users seeking recreational experiences that rely on remote settings.

The projected impacts of oil and gas exploration and development are the same as those described under Alternative 1. However, Alternative 3 would place additional emphasis on leasing restrictions, that would directly or indirectly benefit recreation settings by preventing surface-disturbing impacts that could adversely impact them.

No surface occupancy stipulations would be required yearlong on the Beaver Dam Slope, Virgin River Gorge, Fort Pierce, Marble Canyon, Johnson Spring,

Lost Spring Mountain, Moonshine Ridge, Witch Pool, Nampawap, and Paria Plateau ACECs. Kanab Creek and Grama Canyon are also designated as no surface occupancy.

Additionally, important scenic areas that are not provided additional protection from special designations but would require special leasing restrictions (no surface occupancy) to prevent visual scars on slopes greater than 30 percent would indirectly benefit recreation settings by preventing adverse surface impacts. These areas are Parashant, Dansil and Andrus canyons, Hurricane Cliff, upper and lower Grand Wash Cliffs, Moccasin Mountain, and Diamond Butte areas. (See Appendix 11 for restrictions on leasable minerals.)

FROM RECREATION

Recreation management under Alternative 3 would provide greater focus throughout the district on the amount or type of visitor use, visitor use patterns, experience opportunities, or visitor needs than under current management. In the long run, such management would be much more responsive to change, resulting in benefits to the variety of visitor experience opportunities and to the settings on which these opportunities described in Table III-20, the various types of activities described in Table III-22, and to the settings on which these opportunities are dependent.

The establishment of the Parashant, Mt. Trumbull, and Canyons and Plateaus of the Paria SRMAs, would provide greater emphasis on intensive recreation management than would current management. The management prescriptions associated with these areas would focus management on providing and maintaining moderate to high quality recreation settings on 386,000 acres. Activity plans for these areas as well as improving visitor services would be significant actions that would contribute to more intensive recreation management in these areas.

The remainder of the district would consist of large, extensive recreation management areas (ERMAs) with overall management direction coming from the guidance defined for areas A and B. In A areas, recreation management emphasis on 1,653,000 acres of the district would be to provide opportunities for visitors to engage in a variety of activities (Table III-22) in settings ranging from roaded natural (RN) to semi-primitive nonmotorized (SPNM). In B areas (895,000 acres), due to their remote nature, the emphasis would shift toward providing opportunities for various activities (Table III-22) that typically take place in more primitive settings.

FROM OHV DESIGNATIONS

Management of OHV use under Alternative 3 would establish designations throughout the district, maintaining or enhancing opportunities for visitors seeking non-motorized, semi-primitive experiences on 429,600 acres closed to OHV use. The remaining land is either limited to existing roads and trails (1,897,000 acres) or limited to designated roads and trails (558,800 acres). These district-wide designations would help maintain semi-primitive and roaded natural settings by directing OHV use to roads and trails rather than allowing indiscriminate off-road activity. Such designations help maintain physical and social settings, which provide the basis for experience opportunities.

Since there are 5,402 miles of roads and four-wheel drive trails in the district, Alternative 3 would only moderately impact opportunities for the majority of OHV visitors to enjoy backcountry driving experiences. Impacts would come in designations that are either closed or where certain existing roads are closed in limited to designated roads and trails areas.

As under current management, Alternative 3 proposes no open designations, which precludes opportunities for off-road activities such as ATV and dune buggy use. Alternative 3 does not address the need to provide areas for this type of use where there is currently a demand, such as Fredonia.

Alternative 3 does propose to develop OHV management plans and disseminate information regarding OHV opportunities and regulations to the public. This would be highly beneficial to OHV users and non-OHV users alike.

FROM VRM

Under Alternative 3, 51,400 additional acres of class I and 856,000 acres of class II would be added over that described in Alternative 1 (Maps II-27 and II-29). As with Alternative 2, the addition of class I and II areas should enhance recreational opportunities for visitors seeking remote and primitive recreation experiences. Off highway vehicle use in the Virgin River Corridor ACEC from the mouth of the gorge to the Nevada state line could be restricted in this designated class I area.

CONCLUSIONS

Management actions and impacts are the same as Alternative 2, except as follows:

Recreational opportunities such as OHV use, sight-seeing, and gathering forest products could be eliminated on 15,010 acres of lands identified for transfer from federal ownership under this alternative.

Designation of the Paria Plateau, Parashant and Mt. Trumbull areas as SRMAs and designation of ACECs, which are proposed to be withdrawn from mineral entry, would ensure that the existing natural setting be maintained. This would result in beneficial impacts for the users seeking opportunities on the primitive nonmotorized spectrum.

Impacts from riparian management would be the same as Alternative 2 except for 120 acres of riparian demonstration area from which recreation opportunities such as nature study and hiking would be eliminated.

Special status species management under Alternative 3 would close 42,314 acres to OHV use as well as possibly eliminate 5.5 miles of the Rhino Rally motorcycle race route, resulting in adverse effects to OHV users and beneficial effects on those seeking a more primitive, nonmotorized experience.

Overall, OHV use would be more restricted than in Alternative 2, with fewer acres open or limited to existing roads and trails and more acres limited to designated roads and trails or closed. Alternative 3 would result in more intensive recreation management direction associated with individual activity plans for the various SRMA special designations. Management prescriptions would focus on providing and maintaining high quality recreation settings on 386,000 acres.

Alternative 3 would result in more restrictive management on larger acreages than under current management because more acres would be under area B guidelines. This would provide greater protection for scenic resources and natural settings upon which many recreation opportunities depend.

IMPACTS TO VISUAL RESOURCES

Management actions and impacts are similar or the same as Alternative 2, except as follows:

FROM LANDS

- Ownership Adjustments

Implementation of Alternative 3 would result in the availability of 15,010 acres for exchange or sale. Most of this acreage could be transferred by exchange in areas surrounding growing communities.

Low adverse impacts to visual resources in area A would result from these disposals. New facilities/construction, etc., would most likely cause permanent changes to the existing landscape elements (Map II-5). No direct adverse impacts are expected to area B.

- AIRPORTS

Implementation of this alternative would result in closure of the Poverty Flat airstrip. Resulting impacts would be positive for visual resources at the immediate site due to eventual reductions in visual contrasts that currently impact the immediate landscape.

FROM TRANSPORTATION

This alternative is identical to Alternative 2. However, resulting impacts to visual resources would decrease given the greater coverage of B areas where no new permanent access would be allowed. Therefore, Alternative 3 would be beneficial for visual resources.

FROM OHV DESIGNATIONS

Districtwide OHV designations proposed in Alternative 3 would provide the greatest level of protection to visual quality from OHV use by closing, in addition to wilderness, 92,600 acres, and providing no open designations. The remaining land is either "limited to existing roads and trails" (1,897,000 acres) or "limited to designated roads and trails" (558,800 acres). The designations would contribute to the protection of visual quality by directing OHV use to roads, trails and open areas rather than allowing indiscriminate off-road activity. Such designations contribute to the protection of visual resources by eliminating OHV use in off-road areas as one source of visual contrast.

By not providing open areas, moderate adverse impacts to visual resources from OHV could result in areas near other communities.

FROM VRM

Under Alternative 3, 51,400 additional acres of class I and 856,000 acres of class II would be added over that described in Alternative 1. As with Alternative 2, management focus would be towards preserving scenic values and monitoring visually sensitive areas with specific guidelines for mitigation. Travel corridors would be managed as VRM class II and would be afforded a greater degree of protection from unsightly changes.

CONCLUSIONS

Management actions and impacts are similar or the same as Alternative 2, except as follows:

Alternative 3 could result in removal of 15,010 acres from public ownership. Future development activities would not be subject to BLM objectives or guidelines for visual resource management. Future development activities could cause unacceptable changes in various VRM classes.

Enhanced cultural management would result from an additional ACEC designation on 186,000 acres on the Paria Plateau. This designation would serve in part to further protect scenic resources through protective management in this area. Withdrawal of all ACECs would help preserve their natural settings.

Visual resource management would receive greater attention under Alternative 3. Objectives for management would be geared for maintaining and protecting visual quality in sensitive areas.

Alternative 3 would provide the greatest level of protection for visual resources from impacts associated with OHV use. Beneficial impacts would occur as indiscriminate off road travel is eliminated.

IMPACTS TO WILDERNESS

Management actions and impacts are the same as Alternative 2.

IMPACTS TO TRANSPORTATION/ ACCESS

Management actions and impacts are similar or the same as Alternative 2, except as otherwise noted.

FROM CULTURAL RESOURCES

Johnson Spring, Lost Spring, Moonshine Ridge, Witch Pool and Nampawep ACECs would be closed to OHV to protect cultural values. This would have an adverse impact to those who may desire use of motorized vehicles to travel into or through one of these areas.

FROM SPECIAL STATUS SPECIES

Marble Canyon ACEC and the Beaver Dam desert tortoise ACEC would be closed to OHV use to protect special status species and would be an adverse impact. However, primary unpaved roads would bisect these ACECs and remain open for public travel.

FROM TRANSPORTATION

Same as Alternative 2, except more land would be managed under area B guidelines. New permanent roads would not be allowed in this area to help maintain the naturalness and remoteness.

FROM RECREATION

Under this alternative, the Parashant, Mt. Trumbull area and the canyons and plateaus of the Paria would be designated as SRMAs.

These areas would then be limited to designated roads and trails under OHV management. Visitors who would like additional flexibility to use their OHVs off the designated roads would be negatively impacted. Permanent new roads would not be allowed causing further restrictions for some users.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Impacts to transportation and access from mineral resource exploration and development would be the same as outlined under Alternative 2, except new and improved access would be managed in larger areas under area B guidelines. Areas closed to mineral entry would require less access development.

CONCLUSION

Management actions and impacts are similar or the same as Alternative 2, except as otherwise noted.

Acquisition of certain state and private lands would eliminate the need for easement acquisitions in many situations improving legal access.

Under Alternative 3, designation of certain areas as ACECs or SRMAs would close or limit vehicles to designated roads and trails which would be an adverse impact to some visitors who prefer the flexibility to travel on other routes closed to use.

Newly constructed permanent access would not be allowed and some existing roads may be closed, causing an adverse impact. OHV designations would restrict the public more than current management.

IMPACTS TO SOCIO-ECONOMIC RESOURCES

FROM LANDS

This alternative would make available 15,010 acres of land for exchange or sale to communities with exchanges given first priority. If the lands were sold rather than exchanged, transfer to private ownership would be economically beneficial by increasing the counties tax base and permitting private uses of land for economic purposes. Sales would also generate a one time revenue for the federal government.

FROM ACQUISITIONS

Same as Alternative 2. Acquisition of 161,000 acres of state land and 10,000 acres of private land would provide improved management of public lands. A loss of tax base when private land is acquired would adversely impact the counties. Economic values would accrue through improved quality and quantity of resource base.

FROM COMMUNICATION SITES

Same as Alternative 2. Restricting communication sites to only Seegmiller Mountain could limit opportunities for best coverage as well as expending more money for similar or less coverage. User savings could be realized because of closer access to electric power.

FROM RIGHT-OF-WAY CORRIDORS

Same as Alternative 2. Designation of right-of-way corridors across the district would save time and money for the public and the BLM in processing applications.

FROM CULTURAL RESOURCES

Under Alternative 3, designation of 227,000 acres of the Canyons and Plateaus of the Paria as an SRMA (186,600 acres of which would also be an ACEC), Lost Spring Mountain and Moonshine Ridge as ACECs, would close large areas to firewood gathering and post cutting. This closure could effect commercial and private use creating an adverse social and economic impact. OHVs would also be restricted in the ACECs and SRMAs. Closing these areas to mineral location could also have a negative economic impact. Unclaimed and undiscovered minerals would not be developed.

Positive social impacts would be realized by additional protection afforded cultural resources and recreation lands.

FROM SPECIAL STATUS SPECIES

Same as Alternative 2. To protect such animals as the desert tortoise and the woundfin minnow in addition to riparian habitat, certain lands actions such as sales, exchanges, right-of-ways, and R&PPs may be limited in the Littlefield/Beaver Dam area hindering economic development. Also, these areas would be withdrawn from mineral location and would forego potential mineral development for future, but not present, claimants.

FROM WOODLANDS

Areas would be set aside for commercial and personal harvest of firewood and posts. The areas would be selected for tree size, distance from communities and road conditions. Certain areas currently used for these purposes such as Lost Spring Mountain, Moonshine Ridge and Paria Plateau would be closed when they are designated as ACECs. Closures such as these would be an economic hardship if it becomes necessary for people to travel further to obtain woodland products. Commercial harvesters would have to travel further to reach designated areas, consequently increasing their costs. Personal users would not be in competition with commercial harvesters for resources closer to communities, lowering their costs.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Withdrawal of ACEC lands from mineral entry would forego potential mineral production on unclaimed lands. This could be a significant impact in reducing mineral production, having a negative economic impact.

Socio-economic impacts of restrictions applied to oil and gas leases could be negative. All of the acreage involved in the no surface occupancy category would be less likely to be explored, and is thus, less likely to be developed.

Restrictions in area B would prohibit the disposal of mineral materials from desirable locations near projects creating a hardship on local communities, counties and the state.

FROM RECREATION

Under this alternative, the Parashant and Mt. Trumbull areas would be designated as SRMAs. Interpretation of multiple-use and resource protection, while encouraging visitor use, would be a prime consideration and a positive social benefit in providing additional recreation opportunities.

FROM FORESTRY

Timber harvest would not be allowed in the Mt. Trumbull and Parashant areas under this alternative. This could forego potential positive economic opportunities in harvesting and sale of forest products as described in Alternative 2.

CONCLUSION

Under Alternative 3, more acreage would be made available for exchange or sale than in Alternative 1, providing tax base and private land use opportunities.

Seegmiller Mountain would be designated as a communication site with no further expansion of the Black Rock site which could create an adverse economic impact.

Designation of certain areas as SRMAs and ACECs could restrict timber harvest, firewood gathering and post cutting as well as restricting OHV use creating an economic hardship. Socially, the public could benefit through additional resource protection and interpretation of multiple-use.

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Protection of special status species (desert tortoise and woundfin minnow) could limit lands actions in the Littlefield/Beaver Dam area hindering economic development.

Area B guidelines could limit the sale of mineral materials from desirable locations near projects.

Seasonal and occupancy restrictions could be a significant adverse economic impact to development of mineral leases. Withdrawals from mineral entry could exclude a significant amount of high mineral potential area from exploration and development.

CUMULATIVE IMPACTS

This section addresses the degree, and extent of the cumulative impacts on the physical, biological, and socio-economic environment. Cumulative impacts include the impact on the environment which results from the incremental changes from the various actions when added to other past, present and reasonably foreseeable changes. Cumulative impacts can also result from individually minor, but collectively significant actions taking place over a period of time.

REASONABLY FORESEEABLE IMPACTS (1990-2005)

Reasonably foreseeable impacts are those impacts anticipated to occur if Alternative 3 is chosen as the management strategy. Table III-32 describes the cumulative surface disturbance changes from 1976-1989 and represent the baseline condition existing within the district. Alternative 3 reasonably foreseeable impacts are added to the changes described in Chapter III (cumulative change). To facilitate this analysis, all environmental parameters are grouped into four categories; physical (surface disturbance), biological, remoteness (recreation settings and experience opportunities), and socio-economic.

PHYSICAL COMPONENT

Table IV-4 represents an estimate of past changes (1976-1989) and reasonable foreseeable impacts of each alternative which could occur in the next 15 years depending on which alternative is selected as the management strategy.

Overall, a total of 63,640 acres could undergo some degree of surface impact. The majority (91 percent) of this surface disturbance would involve land treatments

designed to enhance watershed, wildlife and range conditions, and harvest of woodland products and would only cause short-term temporary change to the surface. Five percent or 3,055 acres of the surface change could result in a permanent commitment of resources. These impacts would be due to land developments and agriculture following transfer to private ownership, roads, range-land improvements, utilities, rights-of-way (R/W), leases, recreation facilities, and grants.

Impacts from management of existing watershed, wildlife habitat, livestock grazing activity plans, woodland products, and transportation programs would be the same as or similar to those described under Alternative 1.

Management of the lands and minerals programs could result in an estimated 4,475 acres of surface impact. Approximately 2,625 acres are considered long-term and permanent impacts resulting from lands actions (developments and agriculture following transfer to private ownership, and R/W and leases). Other significant actions and impacts in the lands program are the same as Alternative 2 except: (1) a communication site would be designated on Seegmiller Mountain instead of Black Rock Mountain and (2) the acreage for sale or exchange would be different, 2,890 acres instead of 4,070.

The impacts from the minerals program would be the same or similar to those described in Alternative 1 with the following changes. ACEC designations and withdrawal from mineral location, OHV closed areas, no surface occupancy and season restrictions on leasable minerals could have moderate negative impacts on mineral resource development depending on location and timing of proposed mineral activities. The ACEC designations and proposed withdrawal from mineral location would restrict land from new mining claim location and requires the filing and approval of a plan of operations for any exploration or development activities exceeding casual use. ACECs would be closed to mineral material disposals and no surface occupancy for oil and gas exploration would be a negative impact. Also, oil and gas activities could be impacted by no surface occupancy restrictions due to slope, visual resources, and seasonal restrictions for desert tortoise, bighorn sheep, and peregrine falcon.

Impacts from the management of the cultural resource program would be the same as or similar to those described for Alternative 2 except that the Paria ACEC would be added and the ACECs would be closed to mineral location and OHV use and no surface occupancy lease stipulations for oil and gas would be imposed. This would be a long term beneficial impact to cultural resources.

BIOLOGICAL COMPONENT

Actions under the existing MFPs for development and implementation of wildlife habitat, watershed, and livestock grazing management plans would continue (Table II-1). The plans are designed to reach objectives specific to the plan area and involve rangeland improvements for wildlife habitat, watershed, and livestock grazing and management actions to maintain or improve rangeland conditions.

Impacts from management of watershed, wildlife habitat, livestock grazing, and minerals programs would be the same as or similar to those described under Alternative 1.

Impacts to special status species and riparian would be the same as or similar to those described under Alternative 2 except for the following. The Paria would be designated as an ACEC and ACECs would be closed to locatable mineral location and special status species ACECs closed to OHV and no surface occupancy lease stipulations for oil and gas would be imposed. These additional management prescriptions would provide additional long term benefits for special status species and riparian vegetation.

Impacts which could cause a long term decrease in biological diversity would be related to lands program actions (land developments and agriculture following transfer to private ownership, and rights-of-way and leases), permanent rangeland improvements, recreation facilities, and BLM transportation system upgrades which eliminate vegetation, wildlife or their interactions. Approximately five percent of the total impacts (3,055 acres) would be considered to be a permanent commitment of resources. Wildlife and vegetation would receive moderate, negative impacts of both temporary and permanent duration. Activities associated with lands program could impact about 2,625 acres of wildlife habitat and vegetation in order to facilitate growth and expansion of local communities or to provide for other services.

REMOTENESS COMPONENT

The designation of ACECs, establishment of SRMAs and RCAs, designation of areas closed to OHV and limited to designated roads and trails, area B guidelines, and the interim management of two potential wild and scenic rivers would contribute beneficial impacts to "remoteness" and recreation management in the district.

Impacts on remoteness and recreation from management of watershed, wildlife habitat, livestock grazing,

wilderness, woodland products, and minerals programs would be the same as or similar to those described under Alternative 1. Impacts to visual resources would be the same as or similar to those described under Alternative 2.

The gradual increase in the region's population, the amount of leisure time and the improved recreation vehicles would continue to impact remoteness. The more visitors on the district the less likely is the opportunity to experience remoteness. This factor is one of the most important impacts on remoteness. OHV activities would be adversely impacted by closures and limitation to designated roads and trails in ACECs.

Generally, "remoteness management" under Alternative 3 would significantly change current management's broad and general approach to one focused on experience opportunities and settings. Thus, in the long run, such management could be much more responsive to changing visitor needs and more custodial of the settings in which those needs are met.

SOCIO/ECONOMIC COMPONENT

Population:

Under Alternative 3, 2,890 acres of land would be available for exchange or sale and an additional 12,120 acres would be available for exchange only. It is not expected that all of the identified lands would be transferred out of federal ownership as exchange would be first priority. Land would not be available for R&PP lease/sale. Adoption of this management strategy would tend to favor private expansion of the communities. This could constrain growth of municipal services as land would have to be purchased by the communities for such uses as parks, municipal building sites, etc. In addition, the 25 acres of land under lease for agricultural development would be returned to a near natural condition. While this could be a significant adverse impact to the lessee, it would not be expected to impact the population as a whole.

Income:

Under Alternative 3, direct impacts to income types or per capita income within the local communities could occur. Income derived from mineral development could be impacted if income is presently being generated from areas proposed as ACECs. Closure to mineral entry, no surface occupancy lease stipulations, and management prescriptions for lands within ACECs would restrict surface-disturbing activities and could affect income. This could increase the cost of projects proposed within

ACECs. As a result, range improvement projects, lands actions, mineral resource exploration and development, etc. may be curtailed in these areas due to the higher cost of conducting business. This could result in a decrease in income derived from mineral resource exploration and development, construction, and grazing. Assuming that income levels were to remain static, the potential loss in income from these sectors would have to be compensated by increases in other sectors such as manufacturing or tourism. Increases in tourism would be seasonal in nature and are not expected to increase significantly as a result of adoption of this alternative.

Social Perceptions:

Local residents could view this alternative with disfavor as traditional uses of the land and resources in special management areas would be restricted. OHV use would

be more restricted, woodland harvest areas would be smaller, projects such as range improvements for the benefit of range and wildlife management could be constrained. Rights-of-way or proposals for mineral resource development in these areas would have stipulations attached to them which would significantly increase operating costs. As a result, some projects which may otherwise be initiated, could be cancelled, thus decreasing the potential for construction related jobs.

On the other side of the public perception spectrum, various groups and individuals feel protection of remoteness and natural settings on the district are features which warrant this level of protection. Some may also feel that the level of protection proposed would be insufficient and the recreation setting that the district now offers is the most important resource on the public lands and should take precedence over all other resource uses.



IMPACTS OF ALTERNATIVE 4

IMPACTS TO LAND RESOURCES

FROM LANDS

- Airport

Alternative 4 would result in authorization of a major airport complex in the Ferry Swale area. Approval of this complex would commit the Ferry Swale area to further development from access needs, utilities and other support services that would be necessary to support an airport complex. Local government anticipates many benefits from such a complex. Land values would increase in the area and create a greater demand for surrounding public lands.

If authorized, the City of Page would need to acquire additional lands to replace the city landfill in the area. Negative impacts could be realized from the existence of the Navajo-McCullough 500-KV powerline which could be a hazard to aircraft.

- Acquisitions

Under this alternative, impacts would be the same as those described under Alternative 2.

- Disposals

Under this alternative, impacts would be the same as those described under Alternative 2.

- Right-of-Way Corridor

Under this alternative no new corridors would be designated. Additional powerlines in the Ferry Swale area could be constrained because of the proposed airport.

- Easement Acquisitions

Under this alternative, impacts of easement acquisitions would occur as identified in Alternative 2.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Under this alternative, impacts to land resources are identical to those described in Alternative 1.

FROM SPECIAL DESIGNATIONS

Land use authorizations would be much easier to authorize because of the lack of ACECs and other special management areas. Area B would require mitigation in order to maintain unique characteristics of remoteness and scenic features or qualities. Few such use authorization requests would be anticipated in these areas throughout the life of the plan.

CONCLUSION

Alternative 4 is the same as Alternative 1, except a major airport facility in the Ferry Swale area could be authorized and could result in further development requests for support services that would be needed to accommodate an airport complex and result in secondary impacts to public recreation and wilderness lands. Area B would provide restrictions of land authorization to maintain the areas special values.

IMPACTS TO MINERAL RESOURCES

FROM LANDS

- Land Ownership Adjustments

Ownership adjustment on 28,900 acres of public land could negatively and positively impact the prospect for mineral development as described in Alternatives 1 and 2.

The acquisition of 129,000 acres of state land could have a positive impact on mineral development as described in Alternative 1.

- Airports

The withdrawal of 1,900 acres for an airport in the Ferry Swale area would have a negative impact on min-

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eral resource development in that area. The area in which the tract is located has a high potential for the occurrence of breccia pipes and associated uranium mineralization. Withdrawal of the area from mineral location would essentially preclude the exploration for or development of any locatable mineral resources which may underlie the tract.

- Withdrawals

Revocation of the Vermillion Cliffs Natural Area withdrawal would encourage the exploration for and development of any locatable minerals which may underlie the withdrawn lands. The withdrawn area is located in an area rated as having a high potential for the occurrence of uranium in breccia pipes.

The withdrawn area also contains mineral materials which may be of sufficient quality and quantity to make their extraction economic and desirable. While the withdrawal does not specifically segregate from mineral material disposals, it is district policy not to dispose of material from within the withdrawal. Revocation of the withdrawal would clear the way for the disposal of any mineral materials should a demand develop in this area.

FROM SPECIAL DESIGNATIONS

The designation of 77,000 acres of land on the Paria Plateau as an ACEC would have significant adverse impact on the exploration for and development of locatable mineral resources in that area. The area has been determined to have a high potential for the occurrence of locatable mineral resources, specifically uranium. The designation of the ACEC would require the preparation of an environmental assessment prior to plan approval. This could result in a 30 to 90 day delay for each operation. Operations which would not adversely effect cultural resources and not cause unnecessary or undue degradation would be allowed to proceed.

FROM OHV DESIGNATIONS

The limited OHV designations are not expected to significantly impact the development of oil and gas resources.

CONCLUSION

The disposal of lands would negatively impact the exploration for and development of mineral resources in those areas. Land acquisitions would offset this and encourage mineral resource exploration and development in those areas. The withdrawal of 1,900 acres for an

airport would negatively impact mineral resource development in that area. The proposed airport site lies in an area identified as having a high potential for uranium. The Paria Plateau ACEC would negatively impact locatable mineral exploration and development through the delays associated with required plan approval for any operations proposed exceeding casual use.

IMPACTS TO CULTURAL RESOURCES

FROM LANDS

Impacts under this alternative are the same as Alternative 1, except designation of an airport in the Ferry Swale area and the subsequent development would adversely impact the cultural resources indirectly through increased numbers of people in the area and the anticipated vandalism or inadvertent damage. The approved development would require cultural inventories and compliance with Section 106 of NEPA and therefore direct impacts would be minimal.

FROM SPECIAL DESIGNATIONS

A 77,000-acre ACEC would be designated on the Paria Plateau to protect cultural values on the plateau and would result in a long term beneficial impact. Increased ranger patrols in the ACEC would reduce vandalism and OHV violations. The patrols would help protect artifacts from unauthorized collection, being broken or taken out of their context. This action would benefit cultural resources but some losses would continue.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Impacts to cultural resources throughout most of the district from mineral exploration and development would be the same as outlined under Alternative 1. The exception would be the Paria Plateau ACEC. By virtue of the ACEC designation, plan of operation approval would be required for all operations exceeding casual use within the ACEC. The benefit of this alternative to cultural resource management would be in the form of an extended review period for what would otherwise be a notice level operation. The review period would be extended from 15 days to 30 days, unless substantial public interest is expressed, in which case up to 90 days may be taken for the review. Should significant cultural resource values not be able to be avoided by a proposed operation, they would be evaluated for National Register eligibility. Should the values be found to be eligible, a

program of mitigation would be developed as outlined under Alternative 1.

Under this alternative, cultural resources would be afforded the same level of protection from oil and gas related impacts as outlined under Alternative 1. Impacts to cultural resources would be the same as those outlined under current management.

FROM WOODLAND HARVEST

Designating green wood cutting areas would have a beneficial impact on cultural resources. Allowing dead and down wood cutting districtwide could negatively impact cultural resources because wood cutters could find a site and vandalism occur.

FROM CULTURAL

Impacts would be the same as Alternative 1, except for the ACEC designation on the Paria Plateau. This would result in a long term beneficial impact to cultural resources.

FROM OHV AND TRANSPORTATION

Impacts are the same as Alternative 1 except, part of the Paria Plateau (77,000 acres) would be designated an ACEC and OHV would be limited to existing roads and trails. Area B would limit OHVs to designated roads. The majority of the recreational pursuits involve OHVs, such as woodcutting, casual use, and hunting. Off-road vehicular travel would continue to negatively impact archaeological sites in the other priority cultural areas. Damage occurs when motorized vehicles run over cultural resources resulting in broken artifacts which are also lost or moved out of context, resulting in the loss of information value. Indirect impacts from OHV travel results from access being developed to archaeological sites, increasing the potential of vandalism.

CONCLUSION

Cultural resources would have the same adverse impacts as described in Alternative 1 from OHV use, woodlands, minerals and oil and gas, with the exception of the Paria Plateau ACEC designation. There would be a long term beneficial impact to the cultural resources on the Paria Plateau ACEC and moderate to high losses to the remaining priority cultural areas over the life of the RMP.

IMPACTS TO SOIL, WATER AND AIR RESOURCES

FROM LANDS

Same as Alternative 2 except for the approval of 1,900 acres for the City of Page airport. Depending upon the type and degree of development, negative impacts could result in increased erosion from increased runoff due to airport development. Making additional land available for development would also increase soil disturbance increase the potential for soil erosion for both wind and water. Noise pollution from airplanes would increase significantly. This combined with increased air and vehicular traffic would lower air quality in the area.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Under this alternative, impacts to watershed resources would be similar to those under Alternative 2, except that the size of area B and other special management areas would be much smaller. The possibility of minerals impacts to these areas are not known. However, it can be assumed that a relatively low amount of mineral activity is anticipated to cause minor adverse impacts on watershed resources.

FROM WATERSHED

Impacts would be the same as those discussed in Alternative 1.

FROM RIPARIAN

Impacts would be the same as those discussed in Alternative 1.

FROM FORESTRY/WOODLAND

Impacts would be similar to Alternative 1.

FROM OHV DESIGNATIONS

Impacts on watershed resources are the same as those described under Alternative 2 except more areas would be designated as open and limited to existing roads and trails. This would allow more vehicle use and adversely impact vegetative cover thus increase soil loss from both wind and water.

FROM TRANSPORTATION

Impacts on watershed resources are the same as those described under Alternative 1.

FROM FIRE

Impacts on watershed resources are the same as those described under Alternative 1.

CONCLUSION

Impacts would be similar to Alternative 1, except for the ACEC designation on Paria Plateau and about 1,900 acres would be adversely impacted by the Ferry Swale airport lease. Potential erosion and pollution problems depend upon the scope of development, amount of use and type of facilities. OHV impacts are the same as those discussed in Alternative 2, except more acres would have less restrictions which would result in adverse impacts to watershed.

Seasonal lease restrictions for special status species could have a positive impact to watershed resources.

IMPACTS TO SPECIAL STATUS SPECIES

Management actions and impacts to special status plants would be the same as Alternative 1.

Management actions and impacts to special status animals would be the same as Alternative 1 with the following exceptions.

FROM LAND OWNERSHIP ADJUSTMENTS

Management actions and impacts would be the same as Alternative 2 except the Page airport could have an adverse impact to peregrine falcon. Data does not exist to determine if falcons reside in the area.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Management actions and impacts would be the same as Alternative 1 for special status animal species.

FROM FOREST/WOODLAND

Impacts are similar to those under Alternative 1 except the provision to harvest timber on up to 14,100 acres of ponderosa pine forest could adversely impact special status species. The northern goshawk, and the Mt. Trumbull beardtongue and others could be adversely impacted by this action. Compliance to the Endangered Species Act would be necessary to protect these species.

FROM OHV DESIGNATIONS

The OHV open area near Littlefield is category III tortoise habitat. The area is near Interstate 15 and tortoise densities are extremely low; it is the lowest value tortoise habitat in the area. Use of this area as an open OHV area could have a negative impact on tortoise habitat; however, the open designation could have a positive impact on other tortoise habitat by providing the public a place to use their OHVs.

CONCLUSION

Impacts would be the same as Alternative 1 except in: (1) the case of the Page airport potential adverse impacts on the peregrine falcon, (2) the long term beneficial impacts to desert tortoise and peregrine falcon from seasonal restrictions in leases, (3) constraints imposed through compliance to the ESA and bureau policy could affect the costs, size, methods and/or timing of timber harvests, and (4) the OHV open designation near Littlefield may impact tortoise habitat.

IMPACTS TO RIPARIAN AREAS

Impacts would be the same as Alternative 1.

IMPACTS TO FOREST/WOODLAND RESOURCES

FROM FOREST MANAGEMENT

Under Alternative 4, about 14,100 acres of ponderosa pine forest on the Uinkaret Mountains and the Parashant would have restricted management of forest products; and the 1,100 acres on Black Rock Mountain would continue to be managed for the enhancement of other resources.

Under this alternative, fuel load reductions, prescribed burning, selective timber harvest, thinning and disease control could occur on the Uinkaret and the Parashant.

Impacts of selective timber harvest would remove a small amount of old growth pine (11-inch diameter and larger). Removal of these trees and the prescribed burning of their slash and underbrush would reduce fire fuel, and reduce the dead wood that harbors insects and disease. Thinning of the trees would release more water, nutrients, and minerals to the younger trees. The younger trees would then grow at a faster rate than when in the shade of the larger trees. Harvesting of the intermediate and other suppressed trees would reduce the stand basal area and stimulate seed production and establishment of young trees and consequently a more productive forest.

For discussion of impacts to woodlands see Alternative 1.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Impacts to forestry/woodland resources would be the same as outlined under Alternative 1 (current management).

CONCLUSION

The impacts of this alternative during the life of this RMP, would allow removal of some old growth pine. In the process, underbrush, dead wood, and slash from timber operation would be cleaned up by prescription burning. Trees that were being suppressed by larger trees could then grow faster. Reduction of understory vegetation, dead wood buildup and slash would reduce the disease and insect population potential. This would reduce the fire potential. Overall, implementation of this alternative would be a beneficial impact on the forest by improving its age structure and health.

IMPACTS TO GRAZING MANAGEMENT

FROM LANDS

- Land Ownership Adjustments

Land transfers would have the same impacts as Alternative 2. Loss of grazing land would result from public land disposals adversely impacting permittees. Range

improvements could also be lost by disposals. Compensation would be necessary if a permittee had economic investment in such improvements. Excluding disposed tracts from the remainder of allotments could require fencing.

Land acquisition impacts would be the same as Alternative 2. Acquisition of state or private lands would make additional grazing land available to the permittee while eliminating an administering agency in the case of state land acquisition. Benefits to the bureau's management programs would result from the acquisition of a variety of resource values placed under multiple use management. Public service and efficiency would be improved.

- Airports

Authorization of 1,900 acres for an airport in Ferry Swale could ultimately result in a commitment of 4,300 additional acres to commercial and industrial development. Such action would essentially eliminate livestock grazing on the Ferry Swale and Blue Pool allotments. Current licensed use is 242 cattle from October 16 to May 31, 1,816 AUMs. In addition to the direct loss of this area for grazing, the operators involved would no longer have a viable year-around operation. This would have the impact of reducing the value of private base lands and their remaining public grazing lands in Utah. A long-term high negative impact would result to the permittees from airport authorization.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Impacts to grazing management from mineral development are the same as those described under Alternative 1.

FROM SPECIAL DESIGNATIONS

Negative impacts could result from the Canyons/Plateaus of the Paria ACEC designation because restrictions are placed on vegetative conversion such as chaining and reseeding and no new range improvements are allowed within 100 yards of significant cultural sites.

FROM TRANSPORTATION AND OHV DESIGNATIONS

The impacts of this alternative are similar to those described in Alternative 2. However, less land would be

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placed in the closed category and the limited to designated roads and trails category with proportionately less impacts.

FROM WATERSHED

Intensive watershed management based upon accepted scientific principles could be expected to conserve topsoil and improve vegetative production as well as effective water use. These factors would have a long term beneficial effect upon rangeland condition and consequently on the grazing capacity.

FROM SPECIAL STATUS SPECIES

Impacts to grazing management would be the same as described in Alternative 1.

CONCLUSIONS

Adverse impacts could be expected from land transfer due to loss of grazable acreage and/or range improvements. Additional new fencing may be required. The Canyons/Plateaus of the Paria ACEC designation would impose constraints on vegetative conversion, range improvements and access roads, adversely affecting grazing opportunities. Impacts would be less than in Alternatives 2 or 3, due to the smaller size of the ACEC. Access road closure or restriction would have adverse impacts requiring alternate access methods which may be impractical or inefficient. Airport authorization would result in elimination of cattle grazing on the Ferry Swale and Blue Pool allotments due to commercial and industrial development.

Land acquisitions which add acreage to the public land base could have positive benefits by eliminating one government agency grazing permittees have to deal with. Benefits could also be expected from intensive watershed management. Actions which conserve topsoil and improve vegetative production produce benefits to the rangeland management program.

IMPACTS TO WILDLIFE RESOURCES

FROM LANDS

Impacts same as addressed in Alternative 1.

FROM SPECIAL STATUS SPECIES

Impacts same as those addressed in Alternative 1.

FROM WILDLIFE

Impacts are the same as described for Alternative 1 except maintenance and use of the bighorn sheep enclosure would have positive impacts to maintaining a viable bighorn sheep population or contribute to bighorn sheep research. Maintenance of the facility would continue to be a liability. It would also continue to be an impact on the naturalness of the Paiute Wilderness Area.

FROM FORESTRY

This alternative would allow for the harvest of ponderosa pine on the Uinkaret Mountains and Parashant area under forest management category B. This would negatively impact wildlife objectives in the area for turkey, rats, and Kaibab squirrels. Removal of old growth trees could reduce turkey roosting sites, squirrel habitat and raptor perch sites. Timber management would be directed towards stand improvement and timber harvest and mitigated to minimize wildlife habitat impacts.

Designating ponderosa pine areas on Black Rock as, "forest management areas for the enhancement of other uses" would be beneficial to turkey, raptors, and possibly Kaibab squirrels.

The harvest of ponderosa pine may be beneficial to mule deer through the resultant increase in understory vegetation. Plant diversity and succulence would be expected to increase.

FROM WATERSHED MANAGEMENT

Developing activity plans to intensify watershed management would have direct benefits to most other resource programs including wildlife habitat. These benefits could be brought about through increased vegetative cover and reduced soil erosion.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Impacts to wildlife resources and habitat from mineral resource exploration and development would be the same as outlined under Alternative 1.

Management direction can be applied through development of protective stipulations and mitigating measures. Negative impacts to bighorn sheep could occur without specific lease stipulations.

FROM OHV DESIGNATIONS

The proposed OHV designations would benefit wildlife species because vehicle travel is limited to existing or designated roads and trails, except for 4,500 acres that would be designated as open. Restricting OHV use to existing roads and trails would reduce habitat damage and species disturbance. The 4,500 acres open to OHV use include areas near Fredonia and Littlefield, one south of St. George, Utah and another west of Page. These areas do not have important wildlife habitat; therefore, impacts to wildlife would be minimal.

CONCLUSIONS

Management of ponderosa pine forests under forest management Category B would be contrary to management objectives for wild turkey, raptors and Kaibab squirrels through timber harvest. However, ponderosa pine harvest could benefit mule deer through increasing understory plant diversity and succulence. Due to locatable mineral exploration, wildlife could be adversely impacted by surface-disturbing activities. Wildlife impacts resulting from mineral exploration and development could be reduced or mitigated through development of protective stipulations, but not eliminated.

IMPACTS TO RECREATION RESOURCES

Management actions and impacts are similar or the same as Alternative 1, unless otherwise noted.

FROM LANDS

- Land Ownership Adjustments

Implementation of Alternative 4 could result in 28,900 acres of sales or exchanges shown to be in the public interest. As in the preferred alternative, certain recreational opportunities such as OHV use, sightseeing, and

gathering forest products would be moderately impacted by the loss of public lands.

Acquisitions would be the same as Alternative 1.

The variety of recreational opportunities available on the district (Table III-20) are expected to be enhanced through consolidated land patterns, more consistent management direction, and increased regulation and control of natural settings.

As a result, impacts are expected to be moderately positive for both recreational settings and users.

- Airports

Implementation of Alternative 4 could result in 6,200 acres being used to facilitate an airport in the Ferry Swale area. Significant impacts to recreational settings and experience opportunities would be expected throughout a large area if the proposed airport would facilitate large aircraft or frequent landings. The proposed airport site is surrounded by outstanding recreation lands including Wahweap Marina, Lake Powell, Lee's Ferry, and the Paria Canyon-Vermillion Cliffs Wilderness Area (PCVCWA). Primitive recreational opportunities could be severely degraded in the adjacent wilderness area. Natural settings could be negatively impacted, and the opportunity to experience solitude, remoteness or primitive settings could be eliminated due to noise and visibility of aircraft. Beneficial impacts, such as increased accessibility for visitors in the PCVCWA, could be offset by a decrease in opportunities for remote experiences. Land use patterns changes would be expected throughout a relatively large area in order to provide access and support services for the new facility. The land between the airport and the highway would eventually be developed with facilities which could include motels, restaurants, travel parks, and industrial parks. Impacts would cause a permanent shift in the recreation opportunity spectrum from semi-primitive to a rural setting.

- Withdrawals

Implementation of Alternative 4 would result in revocation of 16,000 acres of the Virgin River Scenic Withdrawal. This revocation would have no impact to the recreational settings or associated wilderness recreational opportunities as the area proposed for revocation is now under wilderness designation.

Alternative 4 would also result in revocation of 4,863 additional acres associated with two withdrawals which

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have segregated these areas from all forms of land use appropriation and entry. These areas would be subject to multiple use. There would be low to moderate potential for impact from surface-disturbing activities which may compromise recreational settings.

FROM CULTURAL RESOURCES

Impacts of this alternative would be similar to that described in Alternative 2, except that beneficial impacts to recreational settings and opportunities would accrue only from a smaller Paria Plateau ACEC (77,000 acres).

FROM WOODLANDS

The availability for fuelwood cutting in the entire district could significantly compromise recreation opportunities for non-woodcutting visitors seeking outdoor experiences in semi-primitive settings. This would impact more of the lands having semi-primitive settings than under current management Alternative 4 would, in allowing fuelwood and Christmas tree cutting, provide excellent opportunities to those who enjoy these uses as recreational pursuits.

Unlike current management, Alternative 4 proposes greater attention to management of woodland products in the form of woodland management plans. Combined with standard operating procedures (e.g. issuing permits, signing and monitoring) this would contribute moderately to the maintenance of semi-primitive and roaded natural settings.

FROM FORESTRY

Ponderosa pine management on Black Rock Mountain would likely shift recreation settings on 1,100 acres in the short term toward the more urban end of the recreation opportunity spectrum. Upgraded roads could encourage greater visitor use and more encounters with other people. Increases in noise and dust, as well as the sudden, visible change to the forests, would moderately impact the opportunities for visitors to experience a "less busy", naturally-appearing setting during harvest periods. Mitigation would reduce dust, however, impacts of upgraded roads and increased noise would be unavoidable during thinning.

The objectives of Category C forest management (Table II-1), if achieved, would enhance recreational settings on 1,100 acres where forest conditions are currently stagnant and ecological diversity is lacking under current management.

The remaining ponderosa pine management proposed in Alternative 4 could impact recreational settings on 14,100 acres in the Uinkaret Mountains and the Parashant area. Adverse impacts would be high in the short term and moderate in the long term. Forest production objectives of the Category B management scheme would have similar impacts on recreational settings to those described above with the added impacts to both the number of trees and the type of trees harvested. There would be fewer aesthetically pleasing co-dominant or old-age trees under Alternative 4.

FROM TRANSPORTATION

Same as Alternative 2.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Under this Alternative, impacts to recreational settings and opportunities would be similar to those described in Alternative 2 except far fewer acres (271,000 acres) would be subject to area B guidelines. As such, fewer areas would exist where special stipulations could be required to protect special or unique scenic values.

Impacts from leasable mineral development are the same as those projected under Alternative 1, except that leases issued in peregrine falcon habitat would contain seasonal no surface occupancy stipulations.

Other sensitive or outstanding backcountry recreational opportunities would not receive any additional protection that would preclude surface disturbance. Through the life of the plan, recreational settings and opportunities for a variety of backcountry activities could be severely degraded.

FROM RECREATION

Recreation management under Alternative 4 would provide greater focus throughout the district on the amount or type of visitor use, visitor use patterns, experience opportunities or visitor needs than under current management. In the long run, focused management would be more responsive to change, resulting in benefits to the variety of visitor experience opportunities described in Table III-20, the various types of activities described in Table III-22, and the settings on which these opportunities are dependent.

The establishment of the Paria Plateau ACEC would provide more emphasis on intensive recreation management than under current management. Management

prescriptions associated with this area would provide and maintain low to moderate quality recreation settings on 77,000 acres.

The remainder of the district would consist of large, extensive recreation management areas (ERMAs) with overall management direction coming from the guidance defined for areas A and B. In A areas, recreation management emphasis on 2,277,000 acres of the district would be to provide opportunities for visitors to engage in a variety of activities (Table III-22) in settings ranging from roaded natural to semi-primitive nonmotorized. In B areas (271,000 acres), due to their remote nature, the emphasis would shift toward providing opportunities for various activities (Table III-22) that typically take place in more primitive settings.

FROM OHV DESIGNATIONS

Alternative 4 is less restrictive to OHVs than Alternatives 2 and 3.

Management of OHV use under Alternative 4 would establish designations throughout the district, maintaining or enhancing opportunities for visitors seeking non-motorized, semi-primitive experiences on 266,000 acres closed to OHV use (includes existing wilderness areas. The remaining land is either "limited to existing roads and trails" (2,374,500 acres), "limited to designated roads and trails" (169,000 acres), or "open" (4,500 acres). Districtwide designations would help maintain semi-primitive and roaded natural settings by directing OHV use to roads and trails rather than allowing indiscriminate off-road activity. Such designations help maintain physical and social settings which provide the basis for experience opportunities.

Since there are 5,402 miles of roads and four-wheel drive trails in the district, Alternative 4 would impact opportunities for the majority of OHV visitors to enjoy backcountry driving experiences only slightly more than under current management. Impacts would occur in those designations that are either closed or where certain existing roads are closed in LDRT areas.

Unlike Alternative 1, Alternative 4 proposes 4,500 acres in four areas to be designated "open," which significantly addresses the need for areas in which opportunities for off-road activities such as ATV and dune buggy use are authorized. Alternative 4 does propose to develop OHV management plans and disseminate information regarding OHV opportunities and regulations to the public. This would be highly beneficial to OHV users and non-OHV users alike.

FROM VRM

Under Alternative 4, 5,000 fewer acres of class I but 187,000 additional acres of class II would be changed from that described in Alternative 1. Travel corridors have been designated class II, affording protection of scenic values along proposed scenic and backcountry byways. As with Alternative 2, the addition of class I and II areas should enhance recreational opportunities for visitors seeking remote and primitive recreation experiences. Off-highway vehicle use in the Virgin River Corridor from the mouth of the gorge to the Nevada state line could be restricted in this designated class I area.

CONCLUSIONS

Management actions and impacts are similar or the same as Alternative 1 unless otherwise noted.

Alternative 4 would create significant long term adverse impacts in Ferry Swale area, should 6,200 acres be utilized for an airport and supporting facilities. Direct and indirect impacts to recreation settings and backcountry experience opportunities would be disturbed over the area.

Under Alternative 4, harvesting of fuelwood in established woodcutting areas throughout the district could adversely affect semi-primitive recreation opportunities by changing the existing physical setting toward the more urban end of the recreation opportunity spectrum. Allowing fuelwood cutting in several areas as well as Christmas tree cutting and wood gathering for campsite use throughout the district would benefit those visitors who enjoy these activities as part of their recreational experiences.

Alternative 4 would provide a more focused recreation management than Alternative 1. The Paria Plateau ACEC would provide and maintain low to moderate quality recreation settings on 77,000 acres. The remainder of the district would be guided by areas A and B. In area B emphasis on 271,000 acres would shift toward providing various remote, backcountry recreation opportunities that typically take place in more primitive or nonmotorized settings.

Impacts from locatable minerals would be similar to Alternative 2, except fewer acres (271,000) would be subject to area B guidelines. Impacts from leasable minerals are the same as Alternative 1, except for seasonal lease stipulations in peregrine falcon habitat. OHV would be less restrictive than Alternatives 2 and 3, with 4,500 acres designated open around population centers.

IMPACTS TO VISUAL RESOURCES

Management actions and impacts are similar or the same as Alternative 2, unless otherwise noted.

FROM LANDS

- Acquisition

Impacts same as Alternative 1.

- Airports

Making available up to 6,200 acres in the Ferry Swale area for an airport and associated facilities would have significant adverse impacts on visual resources by changing the area from an essentially natural landscape to one with considerable cultural modification (human-caused changes) which could not be mitigated.

Buildings, runways, control tower, airport lights and air traffic would greatly change the existing form, line, color and texture in the area, adversely impacting the viewshed from several key observation points including Page, Arizona, the Paria Canyon-Vermillion Cliffs Wilderness, and the Glen Canyon National Recreation Area (GCNRA).

- Communication Sites

Allowing continued development of Black Rock Mountain as a communication site would adversely impact the visual resource by increasing cultural modification of the landscape. Though a communication facility is currently in place at the proposed site, the magnitude of the impact from additional construction would be proportionally greater because of the area's sensitivity. This area is especially sensitive because of its proximity to the Paiute Wilderness (the existing site is within 30 feet of the wilderness boundary).

Allowing development of Seegmiller Mountain as a communication site would also adversely impact the visual resource in the same manner as on Black Rock. This site is less sensitive, however, due to its distance from wilderness and its location in an area that is seldom seen by visitors.

FROM WITHDRAWALS

Vermillion Cliff Natural Area revocation would have a low impact on visual resources in the short term, though long term effects could be significant depending on the nature of human-caused intrusions allowed in the future.

FROM CULTURAL RESOURCES

Impacts to visual resources from cultural resource management on the Paria Plateau ACEC under Alternative 4 would result in slightly beneficial impacts in class I and II areas. Protection of cultural sites would reduce the amount of surface disturbance, thereby maintaining the natural landscape.

FROM WILDLIFE

Impacts to visual resources from wildlife management under Alternative 4 would generally be the same as Alternative 2. One exception would be the Beaver Dam Slope, where in the absence of designation of a desert tortoise ACEC, greater human intrusion could adversely affect the natural landscape in the area. The nature and magnitude of the impacts would depend upon the kind of intrusion.

FROM FORESTRY

Timber management could, in the short term, adversely affect up to 1,100 acres designated as VRM class II areas in the Black Rock Mountain area. Mitigation would offset much of the visual changes that would occur, however, upgraded roads and loss of existing trees (even in a selective harvest) would remain as slight to moderate contrasts with the existing visual settings.

In the long term, the Category C forest resource management could moderately benefit visual quality. Enhancing forest conditions or ecological diversity would create greater vegetative variety in areas that are currently stagnating or vegetatively monotypic.

The remaining ponderosa pine management proposed by Alternative 4 could impact visual quality on 14,100 acres of VRM class II in the Uinkaret Mountains and in the Parashant area. The forest production objectives of a Category B harvest scheme would have similar impacts on these areas to those described above with the added impact of both the number and type of trees harvested. Production would likely remove more trees in the intermediate to old-age classes causing greater visible contrast.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Impacts to visual resources from mineral resource development are the same as those described in Alternative 2, except fewer acres would be subject to area B management guidelines.

FROM RECREATION

Recreation management under Alternative 4 would focus on maintaining and/or enhancing a variety of physical and social settings present in the district. Management of the particular details of the physical setting, i.e. the noticeability of developments and other man-induced change, would be a more important consideration in day-to-day management. Subsequently, visual resources, as a component of physical settings, would receive greater management attention than that proposed in Alternative 1 but somewhat less than Alternatives 2 and 3.

Management prescriptions proposed for the Paria Plateau ACEC would be highly beneficial to maintenance of visual quality in this area by virtue of the constraints placed on development.

FROM OHV DESIGNATIONS

The districtwide OHV designations proposed in Alternative 4 would provide protection to visual quality on 265,600 acres already closed to OHV use by wilderness designation. The remaining land is either "limited to existing roads and trails" (2,374,500 acres), "limited to designated roads and trails" (169,000 acres) or "open" (4,500 acres). These designations would contribute to the protection of visual quality by directing OHV use to roads, trails, and open areas rather than allowing indiscriminate off-road activity. Such designations contribute to the protection of visual resources by eliminating OHV use in off-road areas as one possible source of visual contrast.

Visual quality on public lands in the Fredonia, Black Rock Interchange, Ferry Swale, and Littlefield areas would be highly impacted by open, intensive OHV use. However, by providing open areas, the potential for impacts to visual resources on adjacent lands could decrease to a moderate degree.

FROM VRM

Under Alternative 4, 5,000 fewer acres of class I and 182,000 acres of class II would be added as compared to Alternative 1. As with Alternative 2, management focus would be towards preserving scenic values and monitoring visually sensitive areas with specific guidelines for mitigation. Travel corridors would be managed as VRM class II and would be afforded greater degree of protection from unsightly changes.

CONCLUSIONS

Management actions and impacts are similar or the same as Alternative 2 unless otherwise noted.

Construction of an airport in the Ferry Swale area, as proposed under Alternative 4, would cause high adverse impacts to visual resource classes associated with the adjacent town of Page, Arizona and Paria Canyon-Vermillion Cliffs Wilderness Area.

Communication sites and withdrawal revocations will have only insignificant or minor adverse impacts to the visual resources where these few actions are expected to occur. Most of the withdrawal revocations are in class III or IV with moderate to high sensitivities.

Mineral exploration and development activities would cause short term adverse impacts to visual resources similar to Alternative 1, but would be subject to area B guidelines.

OHV restrictions would be less than for Alternatives 2 and 3. Critical areas for watershed and special status species would limit OHVs to existing roads and trails. Areas around population areas would be classified as open and cause adverse impacts. Overall, impacts on visual resources from OHV would decrease.

IMPACTS TO WILDERNESS

FROM LANDS

- Communication Sites

Management actions and impacts are the same as Alternative 1.

- Withdrawals

Management actions and impacts are the same as Alternative 1.

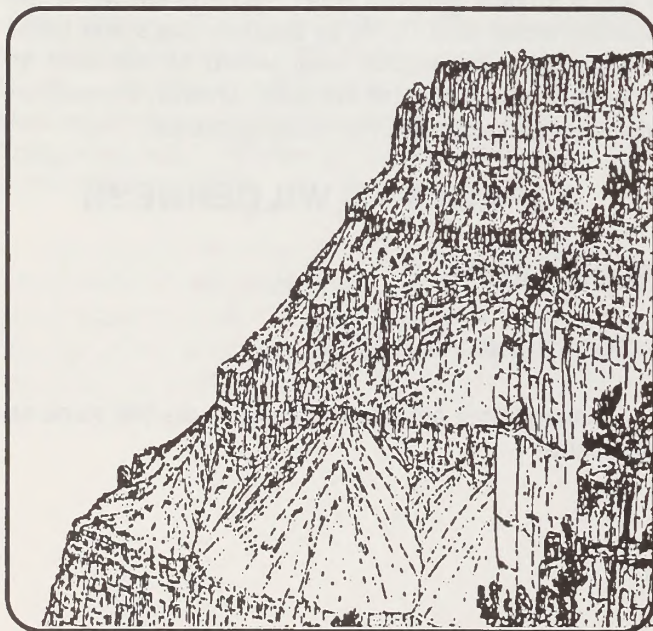
- Airports

Implementation of Alternative 4 would result in a 6,200 acre withdrawal from public land laws to facilitate an airport lease in the Ferry Swale area.

Significant impacts to recreational settings and experience opportunities would be expected throughout a large area if the proposed airport would facilitate large aircraft or frequent landings. The proposed airport site is surrounded by outstanding recreation lands including Wahweap Marina, Lake Powell, Lee's Ferry, and the Paria Canyon-Vermillion Cliffs Wilderness Area (PCVCWA). Primitive recreational opportunities would be severely degraded in the adjacent wilderness area. Natural settings would be negatively impacted, and the opportunity to experience solitude, remoteness or primitive settings would be eliminated due to noise and visibility of aircraft.

FROM FORESTRY

The ponderosa pine management proposed in Alternative 4 could impact the adjacent Mt. Trumbull and Mt. Logan wilderness areas for the short term by the increased noise, activity, dust, as well as the sudden visible change in the forest. The opportunity to experience solitude and remoteness during the harvest period could be impacted.



FROM WILDLIFE

The continued existence and use of the bighorn sheep enclosure in the Paiute Wilderness would be a negative impact on naturalness for the long term.

CONCLUSIONS

The Black Rock communication site could provide adverse impacts to the Paiute-Beaver Dam Wilderness. Due to the overlap of wilderness and the Virgin River Scenic Withdrawal, revocation of the scenic withdrawal would have no impact as the scenic qualities would still be protected by designated wilderness. The Page airport would negatively impact natural settings and the opportunity for solitude in the Paria Canyon Wilderness due to noise and visibility of aircraft. Forest management practices in the Uinkaret Mountains adjacent to designated wilderness (Mt. Trumbull and Mt. Logan) could adversely impact wilderness values due to increased noise, activity, dust as well as visual change. The opportunity to experience solitude and remoteness during the harvest period could be impacted. The continued existence and use of the bighorn sheep enclosure in the Paiute Wilderness would negatively impact the naturalness of the wilderness.

IMPACTS TO TRANSPORTATION/ACCESS

Management actions and impacts are similar or the same as Alternative 2, except as otherwise noted.

FROM AIRPORT

Under this alternative, roads in the Ferry Swale area could be closed or re-routed to accommodate the airport and associated facilities that could take up to 6,200 acres. If the existing Page landfill is closed then its access road could also be removed. These road closures could have a negative impact on access.

FROM CULTURAL RESOURCES

The designation of 77,000 acres on the Paria Plateau as a cultural ACEC would restrict OHV use to existing roads and trails to protect cultural values. Visitors who like the flexibility to use their OHVs off roads and trails would be negatively impacted.

FROM FORESTRY

Under this alternative, ponderosa pine on the Uinkaret Mountains and the Parashant would be available for harvest under restricted management. If harvest did occur, roads would be upgraded and improved to handle logging trucks and support vehicles and in turn benefiting access.

FROM TRANSPORTATION

Same as Alternative 2, except less acreage would be managed according to area B. New permanent roads would not be allowed in area B to help maintain naturalness and remoteness of the area. Other roads may be closed causing an adverse impact to access.

FROM OHV DESIGNATIONS

Designation of the entire district as either open, limited (to existing roads and trails or to designated roads and trails), or closed would place new restrictions on access and adversely affect the transportation system within the district (Map III-23).

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Impacts to transportation and access would be the same as outlined under Alternative 2, except newly constructed access would be managed in certain areas under area B guidelines.

CONCLUSION

Management actions and impacts are similar or the same as Alternative 2, except as otherwise noted.

Roads in the Ferry Swale could be closed or moved if an airport were put in the area causing an adverse impact to access.

Harvesting of ponderosa pine on the Uinkaret Mountains and the Parashant would require road improvements which could benefit the public access.

New permanent roads would not be allowed and other roads may be closed causing a negative impact.

Identified easement acquisition across certain State and private lands would benefit the public.

OHV designations would restrict the public access more than Alternative 1.

IMPACTS TO SOCIO-ECONOMIC RESOURCES

FROM LAND OWNERSHIP ADJUSTMENTS

Same as Alternative 2. Certain identified lands could be transferred to city or county governments under the Recreation and Public Purposes Act for a public purpose causing a positive social and economic impact.

FROM AIRPORTS

Under this alternative, designation of up to 6,200 acres of land in Ferry Swale area for an airport and associated development would be a significant positive impact socially and economically for Page and the surrounding area. Large airplanes could bring in people for conventions and other reasons adding to the economy of the area. The additional noise from larger jets and other aircraft in the Ferry Swale area could also cause a negative social impact with the visitors at the Glen Canyon Recreation Area and the Paria-Vermillion Cliffs Wilderness Area.

FROM RIGHT-OF-WAY CORRIDORS

Designation of right-of-way corridors across the district would save time and money for the public and the BLM in processing applications because analysis of the corridor would have been covered in this RMP/EIS.

FROM FORESTRY

Under Alternative 4, ponderosa pine on the Uinkaret Mountains and the Parashant would be placed in Management Category B, which could make these stands available for harvest under restricted management. Economically, this could be a beneficial impact by creating jobs and putting money into the local economy.

FROM MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Impacts would be the same as described for Alternative 1.

FROM OHV DESIGNATIONS

Under this alternative, designation of the entire district as either open, limited (to designated roads and

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trails, or to existing roads and trails), or closed, would place new restrictions on the OHV enthusiast. Some areas used in the past as open or limited to existing roads and trails could be further restricted making them undesirable for use by these publics resulting in a negative social impact (Map II-3).

CONCLUSION

R&PPs issued to city and county governments on identified lands could have a positive social and economic impact.

Designation of up to 6,200 acres for an airport in the Ferry Swale area near Page could have positive economic and social impacts to the area. Noise from aircraft could negatively affect the Glen Canyon Recreation Area and the Paria-Vermillion Cliffs Wilderness Area.

The designation of two right-of-way corridors across the district in the RMP could save time and money for the applicant and the BLM creating a positive economic impact.

Placing the Uinkaret Mountains and the Parashant forested areas in Management Category B would make them available for restricted management of forest products including timber harvest creating the potential for a positive economic impact.

Guidelines for area B could limit the sale of mineral materials from desirable locations possibly close to communities causing a negative economic impact. Allowing locatable mineral development to occur over most of the district with standard mitigation would preserve potentials for positive economic impacts.

A districtwide designation of OHV use would restrict OHV enthusiasts in certain areas, causing a negative social impact.

Moderate negative impacts to oil and gas exploration could occur in seasonally restricted desert tortoise and bighorn sheep habitats.

CUMULATIVE IMPACTS

This section addresses the degree and extent of the cumulative impacts on the physical, biological, and socio-economic environment. Cumulative impacts include the impact on the environment which results from the incremental changes from the various actions when added to other past, present and reasonably foreseeable changes.

Cumulative impacts can also result from individually minor, but collectively significant, actions taking place over a period of time.

REASONABLY FORESEEABLE IMPACTS (1990-2005)

Reasonably foreseeable impacts are those impacts anticipated to occur if Alternative 4 is chosen as the management strategy. Table III-32 describes the cumulative surface disturbance changes from 1976-1989 and represent the baseline condition existing within the district. Alternative 4 reasonably foreseeable impacts are added to the changes described in Chapter III (cumulative change). To facilitate this analysis, all environmental parameters are grouped into four categories; physical (surface disturbance), biological, remoteness (recreation settings and experience opportunities), and socio-economic.

Physical Component

Table IV-4 represents an estimate of past changes (1976-1989) and reasonable foreseeable impacts of each alternative which could occur in the next 15 years depending on which alternative is selected as the management strategy.

Overall, a total of 78,565 acres could undergo some degree of surface impact. The majority (74 percent) of surface disturbance would involve land treatments designed to enhance watershed, wildlife and range conditions, and harvest of woodland products and would only cause short-term temporary change to the surface. Ten percent or 7,980 acres of the surface change could result in a permanent commitment of resources. These impacts would be due to land developments and agriculture following transfer to private ownership, roads, range-land improvements, utilities, rights-of-way (R/W), leases, recreation facilities, and grants.

Impacts from management of existing watershed, wildlife habitat, and livestock grazing activity plans and woodland products and transportation programs would be the same as or similar to those described under Alternative 1.

The commercial harvest of ponderosa pine forests in the Uinkaret Mountains and the Parashant could result in surface impacts on up to 10,000 acres (13 percent of the total surface disturbance in the district). This could include management practices such as thinning, disease control, selective timber harvest, and associated road

Improvement. The surface impacts would be temporary in nature as the objective would be to maintain a viable productive forest by establishing ponderosa pine seedlings quickly.

Management of the lands and minerals programs could result in an estimated 9,400 acres of surface impact. Approximately 7,550 acres are considered long-term and permanent impacts resulting from lands actions (land developments, airport and related developments, agriculture following transfer to private ownership, and R/W and leases). Other significant actions and impacts in the lands program are the same as Alternative 2 except: (1) acquisition of 129,000 acres of State of Arizona land through exchange, (2) communication sites would be designated on Seegmiller Mountain and Black Rock Mountain, (3) designate up to 1,900 acres of land in the Ferry Swale area for an airport and make available an additional 4,300 acres in the area for City of Page expansion related to the airport. Changes in the physical environment from the programs would be minor with the exception of: (1) the ROW planning corridor outside of the existing Navajo-McCullough route which could result in adverse visual resource impacts and beneficial socio/economic impacts, (2) beneficial social and economic impacts to the City of Page and surrounding area from the airport and facilities, and (3) long term adverse impacts from the Page airport to recreation, visual, watershed, wilderness, and livestock grazing resources.

The impacts from the minerals program would be the same or similar to those described in Alternative 1 with the following changes. ACEC designation on the Paria Plateau and seasonal restrictions on leasable minerals could have minor negative impacts on mineral resource development depending on location and timing of proposed mineral activities. The Paria ACEC designation and proposed management prescription does not preclude locatable mineral development, but requires the filing and approval of a plan of operations for any exploration or development activities exceeding casual use. ACEC would be closed to mineral material disposals. Leasable mineral (oil and gas) activities could be impacted by seasonal restrictions for peregrine falcon.

Beneficial impacts from the long term protection of priority cultural resources on the Paria Plateau would occur from the ACEC designation.

Biological Component

Actions under the existing MFPs for development and implementation of wildlife habitat, watershed, and livestock grazing management plans would continue (Table II-1). The plans are designed to reach objectives specific to the plan area and involve rangeland improvements for wildlife habitat, watershed, and livestock grazing and management actions to maintain or improve rangeland conditions.

Impacts from management of watershed, wildlife habitat, livestock grazing, cultural resource, recreation, minerals and woodland products programs would be the same as or similar to those described under Alternative 1.

Approximately 10,000 acres (13 percent of the total surface impacts) of ponderosa pine forest would be subject to commercial harvest. Harvest of some of the old growth on the Uinkaret and Parashant areas would produce a younger, healthier forest in the long term. Short term impacts to wildlife species would occur throughout the disturbance phase. Mobile wildlife would be temporarily displaced, but quickly returned to the changed and improved habitat. The harvested areas create more diverse vegetative communities than previously existed and would generally be utilized by a wider variety of species than were present prior to treatment. Adverse impacts could occur to wild turkeys, raptors and Kaibab squirrels. Timber harvest would result in beneficial impacts to deer over the long term.

Beneficial impacts to special status species would occur from the seasonal lease stipulations for oil and gas. Special status species that would benefit include desert tortoise and peregrine falcon.

Impacts which could cause a long term decrease in biological diversity would be related to lands program actions (land developments, airports and agriculture following transfer to private ownership, and rights-of-way and leases), permanent rangeland improvements, recreation facilities, and BLM transportation system upgrades which eliminate vegetation, wildlife or their interactions. Approximately ten percent of the total impacts (7,980 acres) would be considered to be a permanent commitment of resources. Wildlife and vegetation would receive moderate, negative impacts of both temporary and permanent duration. Activities associated with lands program could impact about 7,550 acres of wildlife habitat and vegetation in order to facilitate growth and expansion of local communities or to provide for other services.

Remoteness Component

The designation of Paria ACEC, area B guidelines, and the interim management of two potential wild and scenic rivers would contribute beneficial impacts to "remoteness" and recreation management in the district.

Impacts on remoteness and recreation from management of watershed, wildlife habitat, livestock grazing, wilderness, woodland products, and minerals programs would be the same as or similar to those described under Alternative 1.

Short term adverse impacts on remoteness, recreation and visual resources would occur from commercial harvest of timber. Existing roads would be upgraded to accommodate transportation of logs to market. Temporary access would be required during the harvest. Increases in noise and dust as well as sudden, visible change to the forest would impact the recreation opportunities and visual resources. In the long term, the harvest could benefit visual quality and enhance recreation opportunities.

Visual resources could have long term adverse impacts from the R/W corridor depending on location.

The gradual increase in the region's population, the amount of leisure time and the improved recreation vehicles would continue to impact remoteness. The more visitors on the district the less likely is the opportunity to experience remoteness. This factor is one of the most important impacts on remoteness.

Generally, "remoteness management" under Alternative 4 would slightly change current management's broad and general approach to one focused on experience opportunities and settings. Thus, in the long run, such management would be much more responsive to

changing visitor needs and more custodial of the settings in which those needs are met.

SOCIO/ECONOMIC COMPONENT

Population:

Under Alternative 4, the same acreage as Alternative 2 would be available for exchange, sale, or R&PP lease/sale. This acreage would be adequate to accommodate population growth expected over the life of the plan. In addition, 6,200 acres of land would be made available for transfer in the Ferry Swale area to accommodate an airport and industrial park for the City of Page, Arizona. These developments, should they occur, would benefit Page and the surrounding communities through an increase in tourism related industries. The growth of these industries could lead to an increase in population in this area.

Income:

Under Alternative 4, direct impacts to the local economy would occur. Any impacts would be associated primarily with airport construction and industrial park development, should they occur. The relative importance of the service sector would increase in the area as tourism expands. These jobs are generally lower paying jobs, thus per capita income is not expected to change significantly. Should an airport and related industrial park be constructed and new manufacturing industries be attracted to the area, job opportunities would increase. Depending upon the types of industry attracted, per capital income could also increase.

Social Perceptions:

Management under Alternative 4 would be more restrictive than under current management. Under this alternative, an ACEC would be established on a portion of the Paria Plateau for the protection of cultural, recreational, scenic, and geologic values. The management prescriptions for this area could preclude some existing uses and could curtail others. Depending upon the particular use, implementation of Alternative 4 would be seen as either adverse or beneficial to the user or user group.

In general, the perception held by those in the local communities are that no broad restrictions are needed to protect the feeling of remoteness or naturalness. Other groups and individuals feel that there are threats to these resource values and a greater level of control or restriction is needed to protect these resource values.



CONSULTATION AND COORDINATION 5



CHAPTER V

CONSULTATION AND COORDINATION

INTRODUCTION

The Arizona Strip District Resource Management Plan/Environmental Impact Statement (RMP/EIS) was prepared by specialists from the Arizona Strip District Office, Shivwits and Vermillion Resource Areas. The Arizona State Office planning staff and resource specialists provided technical reviews and suggestions. Development of this RMP/EIS began in 1988.

LIST OF PREPARERS

Ilene R. Anderson, Realty Specialist

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Holly Roberts, Surface Protection Specialist

B.S. in Fisheries Science and Wildlife Management from the University of New Mexico. Also Associate degrees in Botany and Range Management from NMU. An Associate degree in Organic Chemistry from New York University. Holly was one of our principle writers and assisted in preparation of several sections. Holly has 10 years with BLM.

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ARIZONA STRIP DISTRICT AND STATE OFFICE ASSISTANCE

The following personnel from the Arizona Strip District Office provided technical assistance and review for this RMP/EIS:

G. William Lamb, Arizona Strip District Manager
Raymond D. Mapston, Associate District Manager
George W. Cropper, Shivwits Area Manager
Robert D. Roudabush, Vermilion Area Manager
Julian L. Anderson, Assistant District Manager for Resources
Ferron L. Leavitt, Assistant District Manager for Operations

The following people from the Arizona State Office provided technical assistance and review for this RMP/EIS.

D. Dean Bibbes, Arizona State Director
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Marvin E. Weiss, Natural Resource Specialist

SCOPING (ISSUE IDENTIFICATION)

Scoping served to identify the significant issues to be analyzed in the RMP/EIS and de-emphasized or eliminated from detailed study insignificant issues or issues addressed in earlier environmental reviews. The significant environmental issues were then incorporated into a range of alternatives, and the effects or impacts of implementing the alternatives were analyzed in this RMP/EIS.

The BLM held numerous public scoping meetings to help identify public concerns about issues. Shown at each of these meetings was a 14 minute video tape about the District and its upcoming RMP. Based on these meetings and a District interdisciplinary team, the issues were finalized.

The scoping process for the RMP/EIS area involved several phases, extending from July 1987 to April 1988.

PUBLIC INVOLVEMENT AND CONSULTATION DURING DEVELOPMENT OF THE DRAFT RMP/EIS

July 1987 Federal Register notice announcing the beginning of the Arizona Strip RMP/EIS and inviting public participation on issue identification.

October 1987 First addition of the Arizona Strip Advisory was sent out to over 500 interested individuals and groups explaining the RMP/EIS process, and asking for input on planning issues.

Public meetings were also held with conservation groups in St. George, Utah and Phoenix, Arizona to solicit comments on planning issues.

November 1987 A public meeting was held in Flagstaff, Arizona with conservation group representatives.

Other public meetings were held in St. George, Page, Flagstaff, Phoenix, and Fredonia. All of these meetings were to solicit comments on planning issues.

A meeting was also held with the North Kaibab Ranger District, USFS in Fredonia to discuss issues

December 1987 Meetings were held with the Mohave County Board of Supervisors and Region III of the Arizona Game and Fish Department in Kingman, Lake Mead Recreation Area of the National Park Service, (NPS) Boulder, Nevada, Glen Canyon National Recreation Area of the NPS in Page and Grand Canyon National Park of the NPS at Grand Canyon, Arizona to discuss issues.

A mineral scoping meeting was held in St. George to discuss issues.

January 1988 A public meeting was held at Marble Canyon, Arizona, to solicit comments on planning issues.

Meetings were held with the District Grazing Advisory Board and the Advisory Council.

March 1988 The second RMP Advisory was issued to more than 500 interested individuals and groups. This issue summarized the results of the public scoping meetings and revised planning issues.

July 1988 The third RMP Advisory was issued to more than 500 interested individuals and groups. This issue brought the public up to date on new developments such as land exchanges and ACEC.

October 1988 The District Grazing Advisory Board was brought up to date on the RMP.

November 1988 A meeting was held with the District Advisory Council.

December 1988 - A fourth RMP Advisory was issued to those on the Districts mailing list. In addition to updating everyone on our progress, it also discussed ACECs. It also listed dates, times and places of additional public meetings.

January 1989 - Public meetings were held in Page, Marble Canyon, Littlefield, Flagstaff, Phoenix, Fredonia, Colorado City, and St. George. All of these meetings were to update the public and discuss issues, area objectives, alternatives and special designations such as ACECs. Additional meetings were also held with the Kaibab Forest, Glen Canyon Recreation Area, Lake Mead Recreation Area, Mohave County and Kanab BLM.

March 1989 - Additional meetings were held with the Kaibab Paiute tribal officials and Las Vegas BLM.

June 1989 - A meeting was held with the Grand Canyon National Park.

Meetings were also held with the Districts Advisory Council and the Grazing Advisory Board.

LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS TO WHOM COPIES OF THIS STATEMENT WILL BE SENT

The BLM is requesting comments on the draft RMP/EIS from all interested individuals, interest groups, federal and state agencies. Because of the size of the mailing list (700), only a partial list of those who will receive the document follows.

FEDERAL AGENCIES

- Advisory Council on Historic Preservation
- Department of Agriculture
 - Agricultural Research Service
 - Forest Service
 - Soil Conservation Service
- Department of Defense Air Force
- Department of the Interior
 - Bureau of Indian Affairs
 - Bureau of Land Management
 - Bureau of Mines
 - Bureau of Reclamation
 - Department of Energy
 - Fish and Wildlife Service
 - Geological Survey
 - National Park Service

ARIZONA STATE AGENCIES

- Arizona Department of Mines
- Arizona Department of Transportation
- Arizona Game and Fish Department
- Arizona Office of Economic Planning and Development
- Arizona Oil and Gas Commission
- Arizona Public Service
- Arizona State Clearing House
- Arizona State Land Commission
- Arizona State Land Department
- Arizona State Planning Department
- Arizona State Historic Preservation Office

LOCAL AGENCIES

- Arizona Association of County Governments
- Arizona Strip District Advisory Board
- Arizona Strip District Multiple Use Council
- City of Kanab
- City of Page
- City of Mesquite
- Coconino County Board of Supervisors
- Five County Association of Governments
- Littlefield-Hurricane National Resource Conservation District
- Mohave County Board of Supervisors
- Mohave County Planning
- San Juan County Commission
- Washington County Commission

INDIAN TRIBES

- Hopi Tribe
- Kaibab-Paiute Tribe
- Navajo Nation

INTEREST GROUPS

- American Mustang Association
- Arizona Desert Bighorn Sheep Society
- Arizona Miners and Prospectors Association
- Arizona Nature Conservancy
- Arizona Riparian Council
- Arizona Wildlife Federation
- Canyon Under Siege
- Defenders of Wildlife
- Desert Tortoise Council
- Friends of the River
- Grand Canyon Trust
- National Wildlife Federation
- Northern Arizona Audubon Society
- Sierra Club

Southern Utah Wilderness Alliance
Southwest Mineral Exploration
Southwest Resource Council
Wildlife Society
The Wilderness Society

ELECTED REPRESENTATIVES

Federal

Senator Dennis DeConcini
Senator Orrin Hatch
Senator John McCain
Congressman Morris Udall
Congressman James T. Hansen
Congressman Bob Stump

State

Governor of Arizona Hon. Rose Mofford
Senator Arthur Hubbard Sr.
Representative Benjamin Hanley



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APPENDIX 1 ALLOTMENT CATEGORIZATION

"I" IMPROVE CATEGORY ALLOTMENTS

Allotment		Current	Proposed	Stage of
Name	Number	Management	Management	Implementation
Atkin Well	5207	Season Long	Deferred	Not
Beanhole	5334	Rest Rotation	Rest-Rotation	Implemented
Belnap	4849	Season Long	Deferred	Not
Belnap West	4822	Season Long	Deferred	Not
Big Spring	4871	Season Long	Deferred	Not
Big Spring Pipeline	4870	Season Long	Deferred	Not
Black Canyon	4837	Deferred	Deferred	Implemented
Blake Pond	4813	Deferred	Deferred	Implemented
Blue Pools UT	5312	Season Long	None Written	Not
Buffalo Tank	5335	Deferred	Deferred	Implemented
Canaan Gap	5205	Deferred	Deferred	Implemented
Cedar	5258	Season Long	Unsigned	Not
Cedar Knoll	5318	Rest-Rotation	Rest-Rotation	Implemented
Cedar Pockets	4866	Deferred	Deferred	Partial
Chatterly	5307	Deferred	Deferred	Partial
Clayhole	5215	Rest-Rotation	Rest-Rotation	Implemented
Cold Spring	4873	Season Long	Deferred	Not
Cole Spring	4872	Season Long	Deferred	Not
Cottonwood	4809	Season Long	Deferred	Partial
Coyote	5327	Season Long	Deferred	Partial
Cram	5333	Season Long	Deferred	Partial
Crosby Tank	5219	Season Long	Deferred	Partial
Fern Tank	5217	Best Pasture	Best Pasture	Implemented
Ferry Swale	5336	Season Long	None	Not
Ferry Swale UT	5342	Season Long	None	Not
Flat Top Well	5214	Deferred	Deferred	Implemented
Franks Reservoir	5325	Season Long	Deferred	Not
Fuller Road	5324	Deferred	Deferred	Implemented
Grassie Mountain	4825	Deferred	Deferred	Partial
Gunsight	5320	Season Long	Deferred	Partial
Hacks Canyon	5232	Season Long	Rest-Rotation	Not
Haslem Spring	5201	Season Long	Deferred	Not
Haslem Spring UT	5239	Season Long	Deferred	Not
Hat Knoll	4837	Deferred	Deferred	Implemented
Highway	4812	Deferred	Deferred	Partial
Homestead	5253	Season Long	Deferred	Not
House Rock	533	Deferred	Deferred	Implemented
Hurricane Rim	5254	Deferred	Deferred	Implemented
Imlay	4817	Season Long	Deferred	Not
Ivanpah	4858	Deferred	Deferred	Implemented
Jump Canyon	4801	Deferred	Deferred	Implemented
June Tank	5221	Rest-Rotation	Rest-Rotation	Implemented
Lambing	4838	Deferred	Deferred	Implemented
Lee's Ferry	5337	Deferred	Deferred	Implemented
Link Spring	4819	Season Long	Deferred	Not
Loco Point	5260	Season Long	Unsigned	Not
Lower Hurricane	4837	Deferred	Deferred	Implemented
Lytle Spring	5252	Season Long	Deferred	Not
Meeks Reservoir	5259	Season Long	Unsigned	Not

APPENDIX 1 (CONTINUED)

ALLOTMENT CATEGORIZATION

"I" IMPROVE CATEGORY ALLOTMENTS

Allotment		Current Management	Proposed Management	Stage of Implementation
Name	Number			
Mustang Spring	4859	Season Long	Deferred	Partial
Navajo Well	5348	Deferred	Deferred	Implemented
Penn's Well	4852	Season Long	Deferred	Partial
Pigeon Tank	5322	Deferred	Deferred	Implemented
Pocum Tank	4840	Deferred	Deferred	Implemented
Pratt Tank	5314	Rest-Rotation	Rest-Rotation	Implemented
Quail Canyon	4856	Deferred	Deferred	Implemented
Rock Reservoir UT	5345	Season Long	Deferred	Not
Scotties Seep	5236	Season Long	Deferred	Partial
Short Creek UT	5240	Season Long	Deferred	Not
Signature Rock	5350	HGM	HGM 8 Past	Implemented
Soap Creek	5332	Season Long	Deferred	Partial
Sullivan Tank	4816	Deferred	Deferred	Implemented
Sunshine	4863	Season Long	Deferred	Not
Sunshine Tank	5247	Season Long	Deferred	Partial
Temple Trail	5216	Deferred	Deferred	Implemented
Tuweep	5220	Rest-Rotation	Rest-Rotation	Implemented
Two Mile	5328	Deferred	Deferred	Implemented
Vermillion	5329	Deferred	Deferred	Partial
White Sage	5349	Rest Rotation	Rest-Rotation	Implemented
Wildband	5223	Deferred	Deferred	Implemented
Wildcat	4854	Season Long	Deferred	Partial
Wolfhole Canyon	4811	Deferred	Deferred	Partial
Wolfhole Lake	4823	Season Long	Deferred	Not
Wolfhole Mountain	4839	Deferred	Deferred	Partial

"M" MAINTAIN CATEGORY ALLOTMENTS

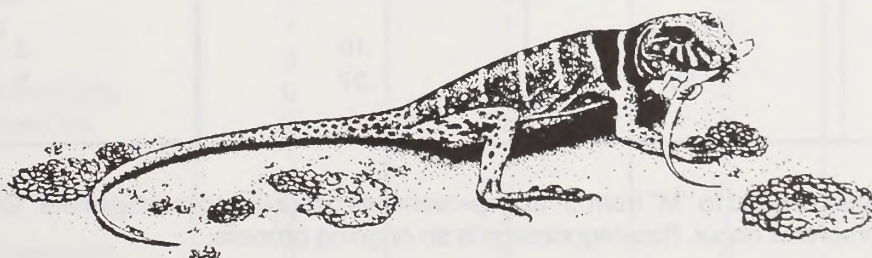
Allotment		Current Management
Name	Number	
Antelope	5206	Season Long
Antelope Spring	5210	Season Long
Badger Creek	5341	Less Intensive
Beaver Dam Slope	4828	Deferred
Black Rock	4841	Deferred
Brown & Shumway	5302	Deferred
Cane Beds	5212	Less Intensive
Cedar Wash	4842	Less Intensive
Clay Spring	4845	Deferred
Cottonwood	5209	Season Long
Cowboy Butte	5310	Rest-Rotation
Coyote	4805	Season Long
Diamond Butte	4833	Season Long
Duncan Tank	4820	Deferred
Glazier Dam	5202	Deferred
Grama Point	5233	Deferred

APPENDIX 1 (CONTINUED)

ALLOTMENT CATEGORIZATION

"M" MAINTAIN CATEGORY ALLOTMENTS

Allotment		Current Management
Name	Number	
Hidden Spring	4803	Season Long
Hurricane Cliff	5251	Season Long
Jackson Tank	4830	Deferred
Jacob Canyon	5317	Season Long
Lamb Tank	5257	Rest-Rotation
Last Chance	4815	Deferred
Little Tank	4853	Deferred
Little Wolf	4814	Rest Rotation
Littlefield Community	4827	Season Long
Lizard	4857	Deferred
Lynn & Tone	5211	Season Long
Mainstreet	4808	Best Pasture
Mesquite	4832	Less Intensive
Moonshine	5237	Deferred
Mormon Well	4844	Season Long
Mosby	4835	Deferred
Mosby-Nay	4836	Less Intensive
Mount Trumbull	4826	Deferred
Mule Canyon	4821	Deferred
Pa's Pocket	4848	Season Long
Pakoon	4802	Deferred
Pakoon Spring	4800	Season Long
Parashant	4829	Deferred
Pipe Spring	5235	Rest-Rotation
Pipe Valley	5242	Season Long
Point of Rock	5241	Season Long
Purgatory Canyon	4831	Season Long
Rock Canyon Tank	5319	Deferred
Rock Pockets	5213	Deferred
Shuttleworth	5315	Less Intensive
Sullivan Canyon	4810	Deferred
Swapp Tank	5248	Deferred
Tassi	4851	Less Intensive
Toquer Tank	4861	Deferred
Valley Wash	5234	Rest-Rotation
Wells	5208	Season Long
White Pockets	5243	Season Long
Whiterock-Soapstone	4804	Deferred



APPENDIX 1 (CONTINUED) ALLOTMENT CATEGORIZATION

“M” MAINTAIN CATEGORY ALLOTMENTS

Allotment		Current Management
Name	Number	
Antelope Island	5306	Season Long
Button	5308	Less Intensive
Cedar Ridge	5303	Less Intensive
Cove	5204	Season Long
Dripping Spring	4818	Season Long
Eight Mile Pass	5304	Season Long
Ferrin	5246	Season Long
Grama Springs	5225	Less Intensive
Gulch	5230	Less Intensive
Hacks	5227	Less Intensive
Harris Well	5238	Season Long
Highway	5309	Season Long
Home Ranch	4855	Season Long
Iverson	4834	Season Long
Joe	5245	Season Long
Kanab Creek	5321	Season Long
Kanab Gulch	5224	Season Long
Lane	5271	Season Long
Littlefield Free Use	4843	Season Long
Lost Spring Gap	5300	Season Long
Mountain Sheep	4806	Season Long
Pat's Pond	4862	Season Long
Rider	5305	Less Intensive
Rock Canyon	5200	Season Long
Rosenberry	4846	Season Long
Russel Fields	5269	Season Long
Sage	5311	Season Long
Shinarump	5301	Season Long
Short Creek	5270	Season Long
Stateline	5244	Season Long
Wahweep	5340	Season Long

CATEGORIZATION HISTORY

Year	% of Acreage		
	I	M	C
1984	88	10	2
1989	58	37	5

Many allotments have been moved to “M” from “I” as improvements occur due to management. Other allotments are moved into “I” when problems occur. Recategorization is an ongoing process.

APPENDIX 2

RANGELAND TREND

Rangeland vegetative trend (the direction of change in range condition observed over time) is determined through 200 permanently located plot transects measured every two to five years. Parameters observed in the transects are occurrence of plant species, composition and density, frequency of bareground, and dead plant litter. Recurring observations measure any significant changes in the above parameters.

Plant species are highly responsive to rainfall, other climatic factors and the effects of grazing. These factors are interrelated and must be recognized in implementing management actions. Plant growth is often more responsive to the timing of rainfall than to the amount received. Growth is maximized when moisture is received during the growing season. Grazing is more subtle in its effect on plants. Moderate grazing will have little impact over the long term. If a plant is grazed heavily on a continuous basis it is reduced in vigor, size and frequency. This is especially so during drought.

Vegetative trend data on the Arizona Strip are available for the years 1981-88 on 491 of the 530 key areas. These data show 187 key areas of upward trend, 254 with static trend and 50 with downward trend. These data along with utilization ranges of key species for 1986-88 are shown on Appendix 2.

Allotments showing unsatisfactory utilization levels and/or downward trend are evaluated to determine cause and corrective measures are taken by change in grazing system or management direction as priorities allow.

RANGELAND TREND/UTILIZATION AS OF 1988

SHIVWITS RESOURCE AREA

Allotment	Number of Key Areas			Utilization Range
	*Up	*Static	*Down	For Key Species
Beaver Dam Slope	4	0	0	11 to 34%
Belnap West	1	0	0	30 to 37%
Big Spring Pipeline	0	2	1	49 to 54%
Black Rock	2	5	0	4 to 55%
Blake Pond	2	2	0	26 to 66%
Cedar Pockets	0	0	1	16 to 34%
Cedar Wash	1	2	0	13 to 21%
Clay Spring	2	2	1	11 to 70%
Cottonwood	0	2	0	16 to 35%
Coyote Spring	1	0	0	10 to 31%
Diamond Butte	2	1	0	10 to 44%
Duncan Tank	1	1	1	19 to 54%
Grassie Mountain	4	1	0	0 to 0%
Hidden Spring	1	1	0	14 to 53%
Highway Pasture	0	1	0	11 to 35%
Imlay	1	2	0	30 to 47%
Ivanpah	2	1	1	8 to 46%
Jackson Tank	1	1	0	19 to 40%
Jump Canyon	4	3	0	41 to 80%
Lambing	2	7	0	25 to 63%
Last Chance	0	2	0	17 to 28%
Link Spring	1	1	0	11 to 59%
Little Tank	3	1	0	20 to 45%
Littlefield Community	0	7	0	16 to 56%
Littlefield Free-Use	0	2	0	12 to 52%
Lizard	1	0	0	31 to 33%
Lower Hurricane	6	2	0	10 to 59%
Mainstreet	12	4	1	6 to 41%
Mesquite Community	0	6	0	8 to 48%

APPENDIX 2 (CONTINUED)

RANGELAND TREND/UTILIZATION AS OF 1988

SHIVWITS RESOURCE AREA

Allotment	Number of Key Areas			Utilization Range For Key Species
	*Up	*Static	*Down	
Mine Valley	0	1	1	3 to 52%
Mormon Well	1	2	0	13 to 18%
Mosby-Nay	0	10	0	12 to 48%
Mt. Trumbull	3	3	1	39 to 57%
Mud & Cane	1	4	0	24 to 59%
Mule Canyon	1	1	1	22 to 50%
Mustang Spring	1	3	0	40 to 54%
Pakoon	2	1	0	7 to 23%
Pakoon Spring	0	3	0	19 to 70%
Parashant	6	4	0	13 to 44%
Pa's Pocket	4	1	0	39 to 49%
Penn's Well	0	4	0	18 to 21%
Poverty	12	1	0	8 to 42%
Purgatory	0	2	0	22 to 40%
Quail Canyon	0	3	0	19 to 30%
Sullivan Canyon	0	5	2	6 to 52%
Sullivan Tank	3	1	0	10 to 19%
Sunshine	1	2	0	18 to 42%
Tassi	3	2	0	11 to 41%
Toquer Tank	2	0	1	3 to 23%
Whiterock-Soapstone	0	4	2	21 to 44%
Wildcat	1	3	1	12 to 53%
Wolfhole Canyon	3	5	0	3 to 65%
Wolfhole Lake	1	1	0	19 to 40%
TOTALS	99 (41%)	128 (53%)	15 (6%)	

VERMILLION RESOURCE AREA

Allotment	Number of Key Areas			Utilization Range For Key Species
	*Up	*Static	*Down	
Atkin Well	0	7	0	6 to 46%
Badger Creek	0	1	1	5 to 23%
Beanhole	3	0	1	22 to 35%
Brown-Shumway	0	1	1	11 to 31%
Buffalo Tank	1	2	1	10 to 64%
Button	2	1	0	5 to 39%
Canaan Gap	3	1	0	22 to 27%
Cane Beds	0	1	1	21 to 57%
Cedar Knolls	2	1	0	21 to 62%
Cedar Ridge	1	0	1	7 to 22%
Chatterly	0	1	1	24 to 40%
Clayhole	4	4	2	7 to 65%
Cottonwood	0	3	0	3 to 51%
Cowboy Butte	3	2	0	2 to 15%
Coyote	2	2	1	8 to 42%
Cram	2	3	0	24 to 30%
Crosby Tank	0	2	0	22 to 30%

APPENDIX 2 (CONTINUED)
RANGELAND TREND/UTILIZATION AS OF 1988

APPENDICES

VERMILLION RESOURCE AREA

Allotment	Number of Key Areas			Utilization Range For Key Species
	*Up	*Static	*Down	
Fern Tank	1	2	4	30 to 72%
Flat Top-Hurricane	0	2	1	16 to 40%
Franks Reservoir	2	1	0	20 to 33%
Fuller Road	1	6	4	20 to 53%
Glazier Dam	3	0	1	5 to 24%
Grama Point	2	2	0	12 to 47%
Grama Spring	2	1	0	27 to 56%
Gulch	-	-	-	--%
Gunsight	0	2	0	14 to 36%
Hacks	2	0	0	23 to 43%
Hacks Canyon	-	-	-	--%
Highway	0	1	0	29 to 70%
House Rock	2	3	0	--%
June Tank	4	4	1	11 to 39%
Kanab Creek	0	2	0	8 to 39%
Kanab Gulch	1	0	1	9 to 34%
Lamb Tank	1	5	0	9 to 38%
Lee's Ferry	1	0	0	14 to 57%
Moonshine	5	7	0	14 to 57%
Mt. Logan	1	2	2	5 to 47%
Muggins Flat	0	3	0	10 to 58%
Pigeon Tank	0	6	0	16 to 58%
Pratt Tank	0	5	0	13 to 50%
Rider	0	1	0	39 to 53%
Rock Canyon Tank	1	0	2	10 to 53%
Rock Pockets	3	0	0	18 to 86%
Scotties Seep	0	2	1	21 to 31%
Shinarump	2	1	0	18 to 32%
Shuttleworth	-	-	-	5 to 44%
Signature Rock	5	2	1	4 to 78%
Soap Creek	3	2	1	3 to 56%
Sunshine Tank	1	2	0	36 to 46%
Swapp Tank	1	2	1	13 to 47%
Temple Trail	1	3	1	31 to 46%
Tuweep	1	3	2	26 to 41%
Two Mile	7	1	0	15 to 70%
Valley Wash	0	1	0	40 to 47%
Vermillion	7	11	0	16 to 66%
Wells	2	1	0	33 to 53%
White Sage	2	6	0	27 to 81%
Wildband	1	2	2	19 to 68%
TOTALS	88 (35%)	126 (50%)	35 (15%)	

Utilization: Range of average pasture utilization, 1986-1988.

Key Species Trend: *Up - 10% and more above point of origin

*Static - within 10% of point of origin

*Down - 10% and more below point of origin

Key Species: Forage species whose use serves as an indicator of the degree of use of associated species.

Key Area: Small portion of rangeland monitored to assess the effects of grazing management.

Zeros appear where data is unavailable

APPENDIX 3

ALLOTMENT CATEGORIZATION CRITERIA

Maintain (M)

- (a) Present range condition is satisfactory.
- (b) Allotments have high or moderate resource potential and are producing near their potential (or trend is moving in that direction.)
- (c) No serious resource-use conflicts/controversy exist.
- (d) Opportunities may exist for positive economic return from public investments.
- (e) Present management is satisfactory.
- (f) Other criteria appropriate to the ES area.

Improve (I)

- (a) Present range condition is unsatisfactory.
- (b) Allotments have high to moderate resource production potential and are producing at low to moderate levels.
- (c) Serious resource-use conflicts/controversy exists.
- (d) Opportunities exist for positive economic return from public investments.
- (e) Present management appears unsatisfactory.
- (f) Other criteria appropriate to the ES area.

Custodial (C)

- (a) Present range condition is not a paramount factor.
- (b) Allotments have low resource production potential, and are producing near their potential.
- (c) Limited resource-use conflicts/controversy may exist.
- (d) Opportunities for positive economic return on public investment do not exist or are constrained by technological or economic factors.
- (e) Present management appears satisfactory or is the only logical practice under existing resource conditions or land ownership pattern.
- (f) Other criteria appropriate to the ES area.

APPENDIX 4

RESOURCE MONITORING AND EVALUATION PLAN

Element	Item	Location	Technique	Unit of Measure	Frequency and Duration	Information Warranting Decision Change
<u>MINERALS</u>	Discovery of mineral resources	Districtwide	Published geologic information and industry contacts	Significant mineral resource	Continuous	The discovery of a significant locatable or leasable mineral deposit or public demand for a salable mineral resource in areas where restrictions to such uses apply would warrant consideration of a plan amendment to encourage rather than restrict mineral resource development in those areas.
<u>CULTURAL RESOURCES</u>	Site vandalism (including OHV damage)	The seven areas of cultural significance (ACECs)	Site inspection (air and ground photo documentation)	Number of sites disturbed	Twice a year/site	Trends indicating increased disturbance.
<u>WATERSHED</u>	Soil loss	Upper Langs Run/ Fort Pierce Wash	Pair runoff plot	Tons/acre/year	Annually	Activity plans
		All proposed watershed activity plans	Erosion equations and models	Tons/acre/year	Initial; follow up every 5 years	Activity plans
		Saline soils	-----	Tons/acre/year	Initial; follow up every 5 years	Activity plans
	Salt loading	Into Colorado River	-----	Tons/year	Initial; follow up every 5 years	Colorado River Salinity Act
<u>WATER</u>	Quality	Riparian areas listed	Field and/or lab analyses	Biological, chemical, and physical properties	Initial for baseline information, then annually	Riparian management program
		Selected acquifers	Field and/or lab analyses	Biological, chemical, and physical properties	Initial for baseline information	Riparian management program plus watershed program data needs
<u>RANGELAND VEGETATION</u>	Condition	530 + key areas	Species composition by use frequency	Ecological condition	Once in 10 years	Downward trend by one condition class
	Trend	530 + key areas	Pace frequency	Change in percentage frequency	End of grazing cycle and allotment categorization requirements	Two grazing cycles of down trend (-20% change)
	Utilization	530 + key areas	Grazed class	Percent forage removed	End of each use period	Utilization of +50% over a 3-year period

APPENDIX 4

RESOURCE MONITORING AND EVALUATION PLAN

Element	Item	Location	Technique	Unit of Measure	Frequency and Duration	Information Warranting Decision Change
<u>SPECIAL STATUS PLANTS</u>	Population stability	Marble Canyon, Lost Spring Mtn., Moonshine Ridge, Johnson Spring, & Fort Pierce ACECs	Field survey	Occurrence, number, age class, distribution	Three times a year	5-year downward trend in population numbers, age/class, disparity, shrinking distribution
	Habitat evaluation and protection	Marble Canyon, Lost Spring Mtn., Moonshine Ridge, Johnson Spring, & Fort Pierce ACECs	Site inspection of habitat	Acres of surface disturbance and number of plants destroyed	Three times a year	Evidence of unauthorized activity
<u>BURROS</u>	Population	Tassi herd area	Helicopter mark recount	Count	Every three years	-----
	Range condition	Tassi herd area	Rangeland Vegetation	See Rangeland Vegetation	Every three years	Condition is reduced
	Sex ratio	Tassi herd area	Ground observation	Count	Every three years	20% change from normal
	Forage utilization	Tassi herd area	Key forage method grazed class	Percent removed	Annually	More than 50% utilization
	Protection	Tassi herd area	Road patrol	N/A	Annually	Signs of harrassment
<u>WILDLIFE HABITAT</u> Desert Bighorn Sheep	Population estimates	Four sheep habitat areas	AGFD survey	Number	Annually	Reestablishment goals and total allowable numbers
	Project use and value	Four sheep habitat areas	Field check	Each project	Annually	Reestablishment goals and total allowable numbers
	Habitat potential	Four sheep habitat areas	Rangeland vegetation	Count	Each 5 years	Reestablishment goals and total allowable numbers
	Fecal analysis	Four sheep habitat areas	Random sample	Samples	Each 5 years	Reestablishment goals and total allowable numbers
	Population estimates	Districtwide	AGFD	Number	Annually	Significant population decrease
Mule Deer	Habitat quality	Districtwide	Field survey	Acres	5-year intervals	Significant population decrease
	Project use, value, & condition	Districtwide	Field survey	Number	Annually	Significant population decrease
	Fecal analysis	Districtwide	Random sample	Samples	Each 5 years	Significant population decrease

APPENDIX 4

RESOURCE MONITORING AND EVALUATION PLAN

Element	Item	Location	Technique	Unit of Measure	Frequency and Duration	Information Warranting Decision Change
Pronghorn Antelope	Population estimates	Three habitat areas	AGFD survey	Number	Annually	Management goals and carrying capacity
	Habitat quality	Three habitat areas	Field survey	Acres	5-year intervals	Management goals and carrying capacity
	Project use, value, & condition	Three habitat areas	Field survey	Number	Annually	Management goals and carrying capacity
	Fecal analysis	Three habitat areas	Random sample	Samples	Annually	Management goals and carrying capacity
Desert Tortoise	Relative densities	Beaver Dam ACEC, Pakoon, Virgin Slopes	Direct count and transects	Number	Annually	Significant population decrease
	Land use activities and impacts	Beaver Dam ACEC, Pakoon, Virgin Slopes	Direct count and transects	Number	Annually	Significant population decrease
Peregrine Falcon	Relative densities	Districtwide	Field survey and study	Number	Annually	Management goals and
	Land use activities and impacts	Districtwide	Field survey and study	Number	Annually	Management goals and
Woundfin Minnow	Stream surveys	Virgin River ACEC	Direct counts	Number	Annually	Significant population decrease
<u>RECREATION</u>	ERMAS	Areawide, focus on higher use areas, especially in area B	Patrol, area inspection for changes to physical setting, traffic counters, estimates,	Visitor days % change in ROS classes toward urban	Check counters monthly Annually in area A,	Data indicates significant change to social settings. Data indicates <5% annual shift in ROS classes <1% in area B
	RCAs, SRMA	Parashant, Mt. Trumbull, Canyons and Plateaus of the Paria	Patrol, area inspection for changes to physical setting, traffic counters, estimates, registers, RAMP and CRMPs	Visitor days % change in ROS classes toward Urban	Check counters monthly Annually	Data indicates significant change to social settings. Data indicates <1% annual shift in ROS classes
	Wild & Scenic Rivers	Paria River, Virgin River	Measure of flow, changes to physical settings, required consideration in all EAs for projects proposed in corridors, river patrols	Flow rate Affect on river classification Resource damage	Monthly Annually Annually	More than 3 months below minimum, mean, human caused change in outstanding values

APPENDIX 4 RESOURCE MONITORING AND EVALUATION PLAN

Element	Item	Location	Technique	Unit of Measure	Frequency and Duration	Information Warranting Decision Change
<u>RECREATION</u> (cont.)	OHV Management	Areawide, focus on closed, LDRT, open areas	Aerial reconnaissance, ground patrol	Visitor days, Violations	Two flights/year during high use; ground patrols monthly by patrol area or as needed	Three violations per season on any given patrol area
	Facilities	Virgin River CG, Dominguez-Escalante Site	Patrol, registers	Visitor days, structural damage	Monthly	In VRCG, data indicates sustained use that requires additional or improved facilities. Increased vandalism
<u>RIPARIAN AREAS</u>	Condition	Nineteen (19) locations in Table III-14	Macroinvertebrate analysis Plant methodology being developed	Species and their quantity Miles/acres	Annually Once per 5-year period	5 years of downtrend Drop of one condition class

APPENDIX 5

RECLAMATION STIPULATIONS

Appendix 5 is a list of all stipulations which will direct reclamation on all surface-disturbing activities. These stipulations have been written specifically to guide the locatable minerals program and provide guidance for the mining companies to better understand the level of reclamation the BLM intends to achieve under the undue and unnecessary requirements of 43 CFR 3809. These stipulations will be used for guidance and are not intended to be directly applied or required for every action.

1. Recontour, smooth, and blend all surface disturbance so as to reduce, to the extent possible, all on and off site adverse impacts including those to visual resources.
2. All permanent structures must be painted or otherwise camouflaged to reduce visual impacts.
3. All improvements that are no longer needed must be removed.
4. Reclamation efforts should be careful not to disturb surface rock so as to create a visual impact greater than that required to construct the project.
5. Threatened and endangered species and/or cultural resource inventories may be required.
6. Reclamation of all mineral activities must be initiated immediately upon completion of the activities.
7. All construction and maintenance activities must be conducted to protect the surrounding resource setting, giving special consideration to noise, dust, garbage cleanup, public safety, hazardous materials, and OHV designation.
8. All chemical barrels, garbage, construction materials or other foreign articles must be removed completely from the project area.
9. At no time may used vehicle or equipment fluids be dumped on public lands. All accidental spills must be reported to BLM and cleaned up immediately.
10. In Area B and in all ACECs, SRMAs, and RCAs, native species must be used.
11. All revegetation efforts must reestablish the vegetative ground cover to equal or exceed that which occurred prior to the disturbance. Mulching may be required to help conserve moisture or hold seed on the site.
12. Irrigation to reestablish vegetation on harsh sites may be required.
13. All road construction and associated travel must be the minimum necessary to accomplish the approved mission. All new roads will be closed immediately upon termination of the project. All existing roads that require upgrading will be rehabilitated back to their original dimensions upon completion of the project.
14. All roads that occur in area B or in special management units must be mitigated to reduce the adverse impact of dust.
15. Reclaimed areas must be fenced or otherwise protected to restrict vehicle access from further use.
16. Mine access roads may be required to be fenced at the mine site, gated and locked to discourage unnecessary public contact with the heavy equipment or other mining activities.
17. Area B and other special management areas are generally not open to mineral material disposal.
18. All powerlines in area B or other special management areas will be constructed to reduce visual resource impacts and will therefore, generally be put along roads and if possible put below the ground.

APPENDIX 5 RECLAMATION STIPULATIONS

19. All surface-disturbing activities will require stockpiling of topsoil where practicable.
20. All surface-disturbing activities on slopes greater than 30 percent will require special mitigation to stabilize the soils. The area will usually require mitigation to control surface water flow.
21. All injuries to wildlife must be reported to BLM as soon as possible.
22. All newly proposed mines must supply the authorized officer adequate information as to the impacts on surface water runoff, groundwater quality and quantity and anticipated impacts on the 100-year floodplain. All mine facilities must be able to store or divert the runoff of at least the 100-year 24-hour storm event.

<p style="text-align: center;">Au <i>Gold</i></p> <p style="text-align: center;">Jewelry Art Electronics Dental</p>	<p style="text-align: center;">CaSO₄ <i>Gypsum</i></p> <p style="text-align: center;">Wallboard Plaster Agriculture</p>	<p style="text-align: center;">Cu <i>Copper</i></p> <p style="text-align: center;">Electronics Construction Machinery</p>
<p style="text-align: center;">U <i>Uranium</i></p> <p style="text-align: center;">Industrial Medical Power Generation</p>	<p style="text-align: center;">Ge <i>Germanium</i></p> <p style="text-align: center;">Infrared and Fiber Optics Semiconductors</p>	<p style="text-align: center;">Ag <i>Silver</i></p> <p style="text-align: center;">Electronics Jewelry Photographic Materials</p>
<p style="text-align: center;">Ga <i>Gallium</i></p> <p style="text-align: center;">Electronics Alloys Research / Development</p>	<p style="text-align: center;">Pb <i>Lead</i></p> <p style="text-align: center;">Batteries Ammunition Glass and Ceramics</p>	<p style="text-align: center;">Zn <i>Zinc</i></p> <p style="text-align: center;">Machinery Construction Transportation</p>

APPENDIX 6

AREA OF CRITICAL ENVIRONMENTAL CONCERN EVALUATION

Nomination	Identification / Evaluation Criteria			Eligibility Conclusions
	Relevance	Importance	Other	
Mt. Trumbull/Mt. Logan	This area contains archaeological, historic, scenic and geologic resource values.	<p>Many of the archaeological site types and features known to occur in the geographic region are represented in this area: pithouses, surface masonry features, habitation structures, hearths, lithic scatters, open campsites, rock art, rock shelters and trails. Sites representing human occupancy from the Archaic (2600 BC) to historic time periods are found within this area. Research potential exists to answer regional archaeological questions regarding settlement trade and cultural development not addressed by other areas on the Arizona Strip.</p> <p>Scientific interest in these sites have been expressed by various universities and organizations including Northern Arizona University, Museum of Northern Arizona, Southern Utah State College, and Brigham Young University.</p> <p>In 1872 sawmills were set up on Mt. Trumbull to provide lumber for construction of the Mormon Temple in St. George. Nixon Spring is the site of one of these sawmills.</p> <p>The outstanding geologic feature within the area is the Uinkaret Volcanic Field, an area of 144 square miles of cinder cones, basalt capped mesas, ice caves and rugged lava flows.</p>	<p>Immediate and potential threats to these resource values include OHV use, woodcutting and cultural site vandalism.</p>	<p><u>Ineligible</u></p> <p>1. This area is considered ineligible for ACEC designation because its cultural and scenic values are not significantly greater than many other areas over the Arizona Strip. Other special management designations are more appropriate.</p> <p>2. Many of the special resource values of this area are contained within the Mt. Trumbull and Mt. Logan wilderness areas. This gives them an adequate level of protection. The special resource values outside wilderness will be monitored to determine adequacy of present management in preservation of these values. Monitoring will determine whether more protective management direction is warranted.</p>

APPENDIX 6 (CONTINUED)

AREA OF CRITICAL ENVIRONMENTAL CONCERN EVALUATION

Nomination	Identification / Evaluation Criteria				Eligibility Conclusions
	Relevance	Importance	Other		
Little Black Mountain	This is a significant cultural site containing some 500 figures. This site exhibits petroglyphs from five separate cultures.	The site may offer answers to important research questions concerning trade routes and cultural migration through the area.	Due to the close proximity of the site to St. George, it is vulnerable to vandalism from the uninformed visitor. The area is also currently open to OHV use which could result in degradation of the integrity of the site for interpretive purposes.		<p><u>Eligible</u></p> <p>1. This is a regionally significant petroglyph site containing evidence of several cultures.</p> <p>2. The site is ideally located to be developed as an interpretive site for the public. 3. The integrity of the site is threatened by vandalism from the uninformed visitor and OHV use.</p>
Nampaweap	This is a significant cultural site consisting of numerous petroglyphs and pictographs located along a canyon rim. Habitation sites also occur on nearby benches.	This site contains evidence of the period of contact between early explorers and Indian cultures. Both historic and prehistoric cultures are represented.	The integrity of the site needs to be protected for public use and interpretation. Potential threats to the site include those associated with range improvements and other competing land uses. These land uses could adversely impact the integrity of the sites.		<p><u>Eligible</u></p> <p>1. This is a significant cultural site containing extensive petroglyphs and pictographs.</p> <p>2. The integrity of the site for public interpretation is dependent upon the immediately surrounding area.</p> <p>3. The integrity of the site is threatened by conflicting land uses.</p>
Fort Pierce	<p>The Fort Pierce area is a large watershed subject to flooding and severe erosion. Soils in the area are highly saline and contribute to the salinity of the Colorado River.</p> <p>It also has a dense population of Siler pincushion cactus (<i>Pediocactus sileri</i>), a federally listed endangered species.</p>	This area has a dense concentration of <i>P. sileri</i> , listed as endangered cactus; there are 760 acres of severe erosion, 22,800 acres of critical erosion and 14,600 acres of moderate erosion. Within this area 23,758 acres are of fragile soils/cryptogamic communities.	<p>The area has grazing privileges throughout and two small gypsum mining operations. Utah BLM has a proposed ACEC adjacent to this area in the Dixie Resource Area for the protection of two endangered plants and the Gila monster.</p>		<p><u>Eligible</u></p> <p>1. The area contributes salinity to the Colorado River.</p> <p>2. The area contains the endangered plant Siler pincushion cactus.</p> <p>3. Designation would provide for the coordinated management of this sensitive area across state lines.</p>
Marble Canyon	Marble Canyon has a population of Brady pincushion cactus (<i>Pediocactus bradyi</i>), a federally listed endangered plant species.	The presence of a listed endangered and category I plant are biological resources of more than local significance. With the exception of one population known in the Glen Canyon National Recreation Area, the population of <i>Pediocactus bradyi</i> within the proposed ACEC is the only	This area borders the Marble Canyon of the Grand Canyon National Park. Potential threats include mineral resource exploration and development and livestock grazing. The area is also open to OHV activity. Data in 1987-1988 from four plots show five tagged plants of <i>P. bradyi</i> were killed		<p><u>Eligible</u></p> <p>1. Federally listed Brady pincushion cactus is endangered. 'Fick' pincushion cactus is proposed for listing. In addition, two state sensitive plants occur in the area.</p>

APPENDIX 6 (CONTINUED)

AREA OF CRITICAL ENVIRONMENTAL CONCERN EVALUATION

Nomination	Identification / Evaluation Criteria			Eligibility Conclusions
	Relevance	Importance	Other	
Marble Canyon (cont.)		other population known on public lands. <i>Pediocactus peeblesianus</i> var. <i>ficksenianus</i> , although more widely distributed than <i>P. bradyi</i> , occurs as small localized populations, none of which currently occur within a protected area. The proposed ACEC is the only area where the two species overlap. Two state sensitive plants, the Atwood cryptantha and indigo bush, provide additional importance to the area.	by OHV activity. Another small number were run over but not mortally injured. The Arizona Plant Recovery Team, the Arizona Nature Conservancy, and the U.S. Fish and Wildlife Service have nominated this ACEC due to the above qualities.	2. OHV activity associated with recreation use and mineral resources exploration threatens the sensitive resources. 3. The Arizona Nature Conservancy, U.S. Fish and Wildlife Service, and Arizona Plant Recovery Team nominated this site.
Lost Spring Mountain	This area contains a federally listed endangered plant species (<i>Pediocactus sileri</i>). It also contains significant archaeological resource values which are sensitive and vulnerable to adverse change.	<i>Pediocactus sileri</i> , a federally and state listed endangered species, occurs here in dense populations. This species is endemic to the Arizona Strip and 4,000 plants are known to occupy the area. Lost Spring Mountain has archaeological site types that represent a broad range of human occupancy and activity including pithouses, grinding camps, rock shelters, petroglyphs, pictographs and pueblos. It is the center mesa in a physiographic unit created by Little Creek Mountain in Utah to the northwest and Yellowstone Mesa to the southeast. The cultural resources of this area have the potential for answering questions of cultural development not only on these three mesas, but also in the Virgin River drainage. Information concerning the interaction with cultural groups in the region may also be gathered here.	Immediate and potential threats to the special resource values of this area include OHV activity, mineral exploration, livestock trampling, collecting, and vandalism. The <i>Pediocactus sileri</i> site was nominated by the Arizona Nature Conservancy, U.S. Fish and Wildlife Service, and the Arizona Plant Recovery Team. Little Creek Mountain, the adjacent area in Utah, is a proposed cultural ACEC.	<u>Eligible</u> 1. The area contains a federally listed endangered plant species requiring special management attention. 2. The area contains regionally significant irreplaceable cultural resource values. 3. Designation would provide for the coordinated management of this sensitive area across state lines.
Witch Pool	This site contains numerous pictographs, petroglyphs, and habitation sites which are regionally and nationally significant from both a prehistoric and historic perspective.	Witch Pool is a permanent water source which was used by Anasazi and Paiute cultures. This site contains walled structures, grinding	The area is subject to potential harm by the uninformed visitor.	<u>Eligible</u> 1. The site has significant historic and prehistoric cultural resource values.

APPENDIX 6 (CONTINUED)

AREA OF CRITICAL ENVIRONMENTAL CONCERN EVALUATION

Nomination	Identification / Evaluation Criteria			Eligibility Conclusions
	Relevance	Importance	Other	
Witch Pool (cont.)		sites, petroglyphs, pictographs and a Christian cross connected through local legend to the Escalante expedition of 1776. The site was visited by John Wesley Powell and contains a pictograph of a one armed man on a horse. A lithograph of the canyon site was made by the Powell expedition. An important water source on private land trails through the region.	Pictograph of one-armed man on a horse exposed and faded warrants protection. The integrity of the area in the immediate vicinity of Witch Pool is important to public interpretation of the site.	<p>2. The site is documented in Major Powell's journal.</p> <p>3. The site is regionally and nationally significant.</p> <p>4. The site will be placed in the public use category allowing interpretation of the cultural resource values.</p>
Johnson Spring	This area contains a federally listed endangered plant species (Pedilocactus sileri). It also contains significant archaeological resource values which are sensitive and vulnerable to adverse change.	Johnson Spring has a dense population of Siler pincushion cactus which is endemic to the Arizona Strip. In addition to its federal listing, the cactus is on the state sensitive list. This area has a known population of 188 plants. The Shinarump Cliffs in the Johnson Spring area has a wide range of archaeological site types with high frequency of early Anasazi sites. Critical research questions concerning the transition from different stages of cultural development may be answered by the high density of Basketmaker sites and Pueblo sites that represent continuous occupancy during the transition.	Immediate and potential threats to the special resource values of this area include OHV activity, mineral resource exploration, livestock trampling, collecting, and vandalism. The <i>Pedilocactus sileri</i> site was nominated by the Arizona Nature Conservancy, U.S. Fish and Wildlife Service, and the Arizona Plant Recovery Team.	<p><u>Eligible</u></p> <p>1. The ACEC contains a federally listed endangered plant species requiring special management attention.</p> <p>2. The area contains regionally significant and irreplaceable cultural resource values.</p> <p>3. Threats to the resources of the area can be adequately controlled through ACEC designation.</p>
Andrus/Dansil Canyons	The canyon rims provide scenic overlooks into Lake Mead National Recreation Area.	Maintaining the naturalness and remote character of the area is a desirable management objective.	The area has a high potential for the occurrence of locatable mineral resources contained in breccia pipes. Mineral exploration and development activities pose some threat to the natural appearance of the area.	<p><u>Ineligible</u></p> <p>1. Scenic resource values are not more than locally significant.</p> <p>2. The canyons do not possess scenery unique in the Grand Canyon region.</p> <p>3. The natural appearance of the area can be adequately protected via other management tools.</p>

APPENDIX 6 (CONTINUED)

AREA OF CRITICAL ENVIRONMENTAL CONCERN EVALUATION

Nomination	Identification / Evaluation Criteria			Eligibility Conclusions
	Relevance	Importance	Other	
Parashant Canyon	This canyon contains scenic values similar to those contained within the upper portions of canyons in Lake Mead National Recreation Area and Grand Canyon National Park.	<p>The BLM-managed portion of this canyon is relatively accessible and provides primitive recreational opportunities.</p> <p>Maintaining the naturalness and remote character of the area is a desirable management objective.</p>	The area has a high potential for the occurrence of locatable mineral resources contained in breccia pipes. Mineral exploration and development activities pose some threat to the natural appearance of the area.	<p><u>Ineligible</u></p> <ol style="list-style-type: none"> 1. The scenic resource values in the BLM-managed portion of the canyon are not particularly interesting and are not more than locally significant. 2. The upper portions of Parashant Canyon do not have scenery unique to the Grand Canyon region. 3. The natural appearance of the area can be adequately protected via other management tools.
Virgin River Corridor	<p>The Virgin River and associated riparian areas provide habitat for two federally listed fish, a group 2 state listed vertebrate, and a restricted endemic plant.</p> <p>The portion of the corridor which pushes through the Virgin/Beaver Dam Mountains contains unique scenic values. This portion also contains 1-15 which carries many thousands of people through the scenic area each day.</p>	<p>The Virgin River Corridor is unique in that it provides habitat for many wild-life, fish and plant species, including several special status species. The federally listed fish species include the roundfin minnow (endangered) and the Virgin River roundtail chub (proposed for listing, category I). The state listed threatened vertebrate is the Virgin River spinedace. A rare thistle, <i>Cirsium virginensis</i>, has been found at one of the saline springs within the corridor. This plant is currently under study by the U.S. Fish and Wildlife Service for special status listing. The Virgin River Gorge reveals spectacular scenic beauty and takes the traveler through a 500 million year geologic era. Interstate 15 winds through the 11 miles of the gorge. The gorge has sections which are only 150 feet wide with vertical rock walls extending 300 to 500 feet high and lying between mountain peaks extending over 2,000 feet.</p>	<p>Riparian habitat modification, both immediate and potential, comprises the major threat that demands special management attention. Specific threats include stream dewatering, water diversion, channelization, road construction, urban growth and intensive recreation use.</p> <p>That portion of the Virgin River Corridor within the Virgin River Gorge is currently protected by a scenic withdrawal which segregates the area from entry under the agricultural and mining laws.</p>	<p><u>Eligible</u></p> <ol style="list-style-type: none"> 1. The riparian area is unique in that it provides habitat for several special status plant and animal species. 2. The Virgin River Gorge has national significance due to the outstanding scenic resource values which are viewed by a great number of travelers each day. 3. The unique resource values at risk lend themselves to protection under ACEC guidelines.

APPENDIX 6 (CONTINUED)

AREA OF CRITICAL ENVIRONMENTAL CONCERN EVALUATION

Nomination	Identification / Evaluation Criteria			Eligibility Conclusions
	Relevance	Importance	Other	
Beaver Dam	This area provides Category I habitat for the desert tortoise, a federally listed endangered species.	<p>The area is important to the maintenance of viable tortoise populations on the Beaver Dam Slope. Current trends in tortoise populations in the area are static to downward. The fragile nature of this desert environment makes it vulnerable to surface disturbing activities.</p> <p>The Desert Tortoise Council and Defenders of Wildlife have expressed interest in this area and its management.</p>	<p>The Beaver Dam Slope has a moderate potential for the occurrence of locatable minerals. Mineral exploration and development could possibly increase in this area.</p> <p>Livestock grazing occurs in the area. Grazing and range improvement projects must be compatible with tortoise recovery.</p> <p>An ACEC and natural area have both been proposed for adjacent lands in Utah by the Dixie Resource Area, BLM.</p> <p>OHV and community expansion impacts are expected to increase throughout the general area.</p>	<p><u>Eligible</u></p> <ol style="list-style-type: none"> 1. The area contains a population of tortoise which is regionally important to the recovery of tortoise populations. The area is susceptible to impacts from urban encroachment and other competing resource uses. 2. Designation of the area as an ACEC would provide the focused management necessary to protect the desert tortoise population from the potential threats.
Whitmore Canyon	This canyon contains scenic values similar to canyons within Lake Mead National Recreation Area and Grand Canyon National Park.	Whitmore Canyon provides the only road access to the Colorado River in this portion of Grand Canyon National Park. River runners from many countries enter and exit the river via this canyon. The significant resource qualities of this area relate to its scenic and recreational resources.	<p>Existing uses in the canyon include livestock grazing and a commercial river running enterprise. Existing disturbances include a lodge and the Whitmore airport.</p> <p>The area has a high potential for the occurrence of locatable mineral resources contained in breccia pipes. Mineral exploration and development activities pose some threat to the natural appearance of the area.</p>	<p><u>Ineligible</u></p> <ol style="list-style-type: none"> 1. Although this area serves as an access route to the Colorado River for river runners, it does not have national or regional significance. 2. Mineral exploration and development do not pose a significant threat to scenic values. 3. The scenic quality of the area can be protected via other management tools.

APPENDIX 6 (CONTINUED)

AREA OF CRITICAL ENVIRONMENTAL CONCERN EVALUATION

Nomination	Identification / Evaluation Criteria			Eligibility Conclusions
	Relevance	Importance	Other	
Parashant	This area is distinguished by its unique ponderosa pine community occurring outside its normal range.	The uniqueness of this area lies in the extensive stringers of ponderosa pine that grow along the drainages at elevations between 5900 and 6200 feet. This is well below the recognized minimum elevation of 6500 feet for ponderosa habitat. The area borders on and provides access to Mount Dellenbaugh and several remote canyons in Lake Mead National Recreation Area and the Grand Canyon National Park. Its mixture of ponderosa and pinyon/juniper woodland provides habitat for mule deer, small game, raptors and other non-game species. A joint effort between BLM and AGFD is under way to introduce wild turkeys and Kaibab squirrels into the area. Its remote location offers opportunities for primitive and semi-primitive recreation activities including backcountry exploring by vehicle, hiking, backpacking, camping, picnicking, and wildlife observation.		<u>Ineligible</u> 1. Area has few if any threats. 2. Values are not endangered or rare. The vegetation, scenery, remoteness, and naturalness are not unique nationally or regionally. 3. Another type of special management designation is more appropriate for this area to protect the resource values and enhance the recreational use of the area.
Kanab Creek Tributaries	This area contains a variety of unusual and interesting geologic formations and features, giving it scenic qualities similar to those found in Lake Mead National Recreation Area and Grand Canyon.	The Kanab Creek Tributaries are characterized by incised canyons, domes, fins, aprons, pinnacles, and cliffs sculpted in colored limestones, mudstones and sandstones by a combination of wind and water erosion. Possible archaeological site types and features in the area include habitation structures, lithic scatters, rock art and rock shelters. Rock art in the lower Kanab drainage tends to be in the format of pictographs.	This area has a high potential for the occurrence of mineral resources contained in breccia pipes. Mineral exploration and development pose some threat to the natural appearance of the area.	<u>Ineligible</u> 1. The scenery, remoteness, and naturalness exhibited by this canyon is not unique in the region. 2. The canyon is relatively inaccessible and significant impacts to the natural appearance of the canyon from mineral resource exploration and development are not expected. 3. Other management practices are better suited to this area for the protection of the natural setting and cultural resource values.

APPENDIX 6 (CONTINUED)

AREA OF CRITICAL ENVIRONMENTAL CONCERN EVALUATION

Nomination	Identification / Evaluation Criteria			Eligibility Conclusions
	Relevance	Importance	Other	
Red Rock and Middle Springs	These two sites consist of small riparian plant communities surrounding spring sources.	Riparian sites provide a great diversity of wildlife habitat, especially in the arid Southwest. Most riparian vegetation consists of grapevine, planted cottonwoods, cattails, and rushes.	These springs and their riparian areas have fenced enclosures with gates. The immediate threat is the open enclosures could be left open occasionally and cattle occupy the riparian areas.	<u>Ineligible</u> 1. The springs are already protected by fences. 2. The springs are not of national or regional significance. 3. No sensitive plant or animal species or irreplaceable values are threatened. 4. The riparian areas are improving through current management practices.
Hazardous Mine Areas	Three abandoned mines and one natural sinkhole present a public safety hazard due to open shafts and an open pit.	The mines are abandoned with old buildings and open mine shafts. They create an attractive nuisance and public safety hazard. The sinkhole is a natural phenomena which poses some threats to livestock and the public.	The abandoned mines include: Savanic - T33N R14W S9 SW1/4 Sun Valley - T38N R6E S6 SW1/4 Unnamed - T40N R15W S14 SW1/4 The Unnamed and Sun Valley mines lie within wilderness areas. Mining claims currently cover the Savanic and Sun Valley mines. The Beaver Dam Sinkhole is located in T41N R15W S12 NW1/4.	<u>Ineligible</u> 1. Due to remoteness, these areas are not considered to be a significant present or potential threat to public safety. 2. Hazards of this type can be adequately managed via other management techniques. 3. The State of Arizona has been notified of these hazards for inclusion in their mine hazard reduction program
Cottonwood Spring	This site consists of an oasis of lush riparian habitat around a spring and small stream.	This spring has four acres of riparian area which is vital to wildlife and livestock in an arid area. The riparian area has cottonwoods, ash, willow, slickrock and sand with pools of water and aquatic vegetation. Migratory birds, deer, and other wildlife utilize this resource.	The livestock permittees have water rights to the spring. Cottonwood Spring is located within the Cottonwood Point Wilderness which provides more than adequate protection to riparian resource values.	<u>Ineligible</u> 1. The area has no national or regional significance. 2. The riparian area does not support endangered or threatened plant or animal species.

APPENDIX 6 (CONTINUED)

AREA OF CRITICAL ENVIRONMENTAL CONCERN EVALUATION

Nomination	Identification / Evaluation Criteria			Eligibility Conclusions
	Relevance	Importance	Other	
Grand Wash (Buckhorn, Grapevine, Whiskey, and Little Arizona Springs)	These four sites consist of small riparian plant communities surrounding spring sources.	Buckhorn, Whiskey, Grapevine, and Little Arizona Springs are located in an area of little live water. The riparian vegetation in these springs include cottonwoods, willows, arrowweed, mesquite, cattails, rushes, etc. This habitat is vital to various wildlife species and livestock in the area.	Livestockmen hold rights to use of the water. Cattle and wild burros periodically gain access to the fenced riparian areas through opened gates, threatening the riparian areas.	<u>Ineligible</u> 1. The springs are insignificant from regional and national perspectives. 2. There are no endangered or sensitive species which are dependent upon the riparian areas around the springs. 3. The areas are fenced and protected. 4. The riparian areas are improving through current management practices.
Moonshine Ridge	This area contains a federally-listed endangered plant species (<i>Pediocactus sileri</i>). It also contains significant archaeological resource values which are sensitive and vulnerable to adverse change.	Moonshine Ridge has a known population of 3,000 plants of Siler pincushion cactus (<i>Pediocactus sileri</i>). The cactus is endemic to the Arizona Strip and is listed as sensitive to extinction by the state in addition to its endangered federal listing.	The entire area has authorized livestock grazing. The area has a high potential for the occurrence of locatable mineral resources contained in both breccia pipes and sandstone bodies. Off-highway vehicle use is presently allowed here. The <i>Pediocactus sileri</i> site was nominated by the Arizona Nature Conservancy, U.S. Fish and Wildlife Service, and the Arizona Plant Recovery Team.	<u>Eligible</u> 1. The area contains a federally-listed endangered plant species requiring special management attention. 2. Regionally significant irreplaceable cultural resource values are present which could provide answers to important resource questions. 3. These resource values, due to their known occurrence in this particular area, lend themselves to focused management which ACEC designation would provide.
Hidden Canyon	Special resource values of this area are the scenic and recreational opportunities.	Excellent opportunities for motorized and nonmotorized activities such as geologic and general sightseeing, hiking, and photography are provided by the 1,800 foot cliffs of Hidden Canyon and the variety of desert vegetation and rock formations.	The area has a high potential for the occurrence of locatable mineral resources contained in breccia pipes. Mineral resource exploration and development pose some threat to the natural appearance of the area.	<u>Ineligible</u> 1. Threats to the natural appearance and topography of the area are low. 2. The scenery, remoteness, and naturalness within the canyon are not regionally or nationally unique, rare or endangered.

APPENDIX 6 (CONTINUED)

AREA OF CRITICAL ENVIRONMENTAL CONCERN EVALUATION

Nomination	Identification / Evaluation Criteria			Eligibility Conclusions
	Relevance	Importance	Other	
Hidden Canyon (cont.)		This portion of the Grand Wash Cliffs canyon country exhibits a rugged and irregular topography along the slopes at the base of the canyon walls. This combination of dramatic vertical relief, irregular cliff lines, rocky terrain and variety of vegetation are the outstanding features in this area.	The area is also currently heavily used by livestock. Heavy grazing in the canyon could adversely effect the vegetation.	3. The natural appearance of the area can be adequately protected via other management tools.
Southern Grand Wash Cliffs	Contains natural, scenic and historic values. The area contains a few primitive four wheel drive roads and many outstanding opportunities for recreation and solitude.	The congressional subcommittee reports on the Arizona Wilderness Act of 1984, included the following: "H.R. 4707 designates only the northern portions of the Grand Wash Cliffs as wilderness. South of the proposed wilderness the cliffs extend for another 15-20 miles until they intersect the Lake Mead National Recreation Area. The same types of wilderness values exist in the southern reaches of the cliffs as in the portion being designated as wilderness. However, the committee has not included these lands in wilderness in recognition of their significant mineral potential (especially uranium). In leaving these lands open for mineral exploration and potential development the committee emphasizes that this is an environmentally sensitive area that should be managed by the Bureau of Land Management to minimize adverse impacts on the current remote and wild values. The committee understands that the type of mining that will take place here is of a low impact, underground type. The committee knows the area to be pristine, containing few primitive, four wheel drive routes and many outstanding opportunities for recreation, solitude and scientific study."	The area has a high potential for the occurrence of locatable mineral resources in breccia pipes. Mineral exploration and development activities pose some threats to the natural appearance of bench between the cliffs. Historic mining related attractions exist in the Grand Gulch and Savanic mines which date from the 1870s. Livestock grazing and associated range improvements could alter the natural appearance of the bench between the cliffs.	<u>Ineligible</u> 1. Even though the area is visually sensitive, containing remote and wild values, mineral resource development techniques would be of the low impact, underground type. 2. Past mining activity is an historic attraction of the area. 3. The natural appearance of the area can be adequately protected via other management tools.

APPENDIX 6 (CONTINUED)

AREA OF CRITICAL ENVIRONMENTAL CONCERN EVALUATION

Nomination	Identification / Evaluation Criteria			Eligibility Conclusions
	Relevance	Importance	Other	
House Rock Valley	U.S. 89A through House Rock Valley is a scenic route providing outstanding views of Vermillion and Echo Cliffs and Kaibab Plateau.	<p>The outstanding scenic features surrounding this area are the colorful and massive Vermillion Cliffs, the jagged line of the Echo Cliffs, and the deep green Kaibab Plateau. While these features are not within House Rock Valley proper, the valley provides a centralized area from which to view and access the surrounding features and visually important foreground and middle ground elements to the more scenic backgrounds.</p> <p>The populations of <i>Pediocactus bradyi</i> within the area are the only populations known on public lands. <i>Pediocactus peeblesianus</i> var. <i>fickesiana</i>, although more widely distributed than <i>P. bradyi</i>, also occurs as small localized populations.</p> <p>Many cultural resource sites occur in House Rock Valley. Portions of two trails of historic significance, the Honeymoon and Dominguez-Escalante, also traverse House Rock Valley.</p>	<p>The area has a high potential for the occurrence of locatable mineral resources contained in breccia pipes. Mineral exploration and development activities pose some threat to the natural appearance of foreground and middle ground elements.</p> <p>Other threats include OHV use which result in visible scars and adverse impacts to special status plants, the trampling of special status plants by livestock, and cultural resource vandalism associated with public use of the area.</p>	<p><u>Ineligible</u></p> <ol style="list-style-type: none"> All of the outstanding scenic features viewed from House Rock Valley are located either in wilderness or on lands administered by another agency. Land use decisions made in the RMP would not affect the scenic values of these areas. The special status plants are proposed to be included within the Marble Canyon ACEC. Cultural resources, both historic and prehistoric, are not threatened by other resource uses or developments. With the exception of the special status plant species, House Rock Valley proper does not contain resources which are regionally or nationally unique, rare or endangered.
Fredonia Saline Soil	This area consists of sparsely vegetated, erosive saline soils.	Part of this critical area, centered about six miles east of Fredonia, has been designated as trail lands by the BLM. The condition occurs where there is an abrupt change in elevation between levels of mesas, foothill slopes, and valleys. Rock exposures are numerous with occasional shale and gypsum outcrops where erosion is active. Sediment movement caused by sheet and rill erosion, valley trenching and upland gully scouring is heavy.	<p>Agents which accelerate erosion in this area are OHV use and livestock grazing.</p>	<p><u>Ineligible</u></p> <ol style="list-style-type: none"> This area is not a significant source of Colorado River salinity. The <i>Pediocactus sileri</i> do not occur in dense populations, being scattered over the entire area. Due to the relatively low levels of populations of these species in this area, ACEC designation is not appropriate.

APPENDIX 6 (CONTINUED)

AREA OF CRITICAL ENVIRONMENTAL CONCERN EVALUATION

Nomination	Identification / Evaluation Criteria			Eligibility Conclusions
	Relevance	Importance	Other	
Fredonia Saline Soil		Soils, consisting of fine sands and clay mixtures, are very susceptible to both wind and water erosion. Roads, rights-of-way and various types of construction projects contribute to the sediment load. This area also has a scattered population throughout of <i>Pediocactus sileri</i> , a federally-listed endangered species.		<p>3. OHV use is intense near Fredonia but most occurs behind flood control dikes, where critical erosion sites and special status plant species do not occur.</p> <p>4. No irreplaceable or unique resource values of a national or regional basis occur in the area.</p>
Paria Plateau	Data obtained from a partial cultural resource inventory conducted on the Paria Plateau indicate the area contains a wealth of archaeological resources representative of the Anasazi culture.	<p>The Paria Plateau contains virtually the entire spectrum of archaeological site types known to occur in the northern portion of the Southwest area. These include pithouses, surface masonry features, habitation structures, granaries, storage cists, hearths, lithic scatters, open campsites, rock art, rock shelters and trails. A high density of impressive structural sites have been documented on the plateau.</p>	<p>Cultural site vandalism by pot hunters is a threat to these sensitive resource values. New evidence of vandalism continues to be discovered in the field. Activities such as wood cutting, OHV use, mineral exploration, etc., also pose some threat through public use of the area.</p> <p>Interest in conducting further research on the cultural resources of the area has been expressed by the following institutions and organizations: Museum of Northern Arizona, Arizona State University, Northern Arizona University, Arizona Archaeological Council, Brigham Young University, and Southern Utah State College.</p>	<p><u>Ineligible</u></p> <p>1. The cultural resource inventory covers less than 25% of the area. Although cultural resources are known on the plateau, current data about site densities and locations is insufficient to warrant ACEC designation.</p> <p>2. The cultural resource values are not directly threatened by BLM programs or authorizations, but rather by public use in the area.</p> <p>3. Cultural site vandalism which has occurred on the plateau would not be effectively reduced through ACEC designation. Designation for the protection of these resource values may be counter productive by increasing public awareness of the area.</p> <p>4. Other designations and management practices for this area are more appropriate for the protection of the cultural resource values.</p> <p>Establishing an ACEC could attract visitors to the area and increase vandalism.</p>

APPENDIX 7

PUBLIC LANDS IDENTIFIED FOR DISPOSAL BY SALE OR EXCHANGE

SALE OR EXCHANGE*

Disposal Description	Acreage	Criteria
T. 39 N., R. 16 W., sec. 4, lot 2;	39.97	1
sec. 5, lots 2 and 3, N1/2 lot 6, N1/2 SW1/4 SE1/4.	118.21	1,3
T. 40 N., R. 7 W., sec. 6, S1/2 NE1/4.	80.00	1
T. 40 N., R. 15 W., sec. 4, all of S1/2 SE1/4 above Virgin River rim.	70.00	1
T. 41 N., R. 5 W., sec. 20, W1/2 NW1/4.	80.00	1
T. 41 N., R. 6 W., sec. 16, SW1/4;	480.00	1,3*** (R&PP)
sec. 31, S1/2 NE1/4, SE1/4 NW1/4; NE1/4 SW1/4, N1/2 SE1/4, SE1/4 SE1/4.	280.00	1
T. 41 N., R. 7 W., sec. 13, NW1/4, N1/2 SW1/4, SW1/4 SW1/4;	280.00	3
sec. 14, E1/2 NE1/4, SW1/4 NE1/4, S1/2 NW1/4, S1/2;	520.00	3 *** (A&AIA)
sec. 23, NE1/4 NE1/4, W1/2 NE1/4, E1/2 NW1/4.	200.00	3
T. 41 N., R. 12 W., sec. 6, lots 1 to 5, incl., SE1/4 NW1/4	237.74	1
T. 41 N., R. 13 W., sec. 1, S1/2 N1/2, SW1/4, W1/2 SE1/4	400.00	1
T. 41 N., R. 15 W., sec. 33, lots 4 and 5, SW1/4 NE1/4, NW1/4 SE1/4; N1/2 SW1/4 SE1/4, SE1/4 SW1/4 SE1/4, SE1/4 SW1/4.	209.53	1,3*** (R&PP)
	<hr/> 2605.45	

*Public lands identified for disposal by sale meets sales criterion number 1 and 3 as described in Sec. 203(a) of FLPMA, as follows:

- (1) such tract because of its location or other characteristics is difficult and uneconomic to manage as part of the public lands, and is not suitable for management by another federal department or agency; or
- (3) disposal of such tract will serve important public objectives, including but not limited to, expansion of communities and economic development, which cannot be achieved prudently or feasibly on land other than public land and which outweigh other public objectives and values, including, but not limited to, recreation and scenic values, which would be served by maintaining such tract in federal ownership.

** Recreation and Public Purposes Act

*** Airport and Airway Improvement Act

APPENDIX 7 (CONTINUED) **PUBLIC LANDS IDENTIFIED FOR DISPOSAL BY SALE OR EXCHANGE**

EXCHANGE ONLY

Description	Acreage
T. 39 N., R. 6 W.,	
sec. 3, lots 1 and 2, N1/2 NE1/4, SE1/4;	319.98
sec. 20, N1/2 NE1/4.	80.00
T. 39 N., R. 16 W.,	
sec. 3, SW1/4 SE1/4;	40.00
sec. 9, SW1/4 NE1/4, SE1/4;	200.00
sec. 10, W1/2 NE1/4, SE1/4 NW1/4, NE1/4 SE1/4.	160.00
T. 40 N., R. 3 E.,	
sec. 34, SE1/4 NE1/4, S1/2 NE1/4 SE1/4, N1/2 SW1/4 SE1/4, SE1/4 SE1/4, S1/2 NE1/4 NE1/4, SE1/4 NE1/4 SW1/4, NE1/4 SE1/4 SW1/4.	160.00
T. 40 N., R. 5 W.,	
sec. 6, lots 2, 3, 4 and 7, SE1/4 SW1/4, NE1/4 SE1/4, S1/2 SE1/4.	276.44
T. 40 N., R. 6 W.,	
sec. 1, lots 1 to 4, incl., SE1/4 NE1/4, SW1/4 NW1/4, W1/2 SW1/4;	270.36
sec. 3, lots 1 and 2, N1/2 NE1/4, SE1/4;	294.90
sec. 4, lots 3 and 4, S1/2 NW1/4, SW1/4, W1/2 SE1/4;	375.02
sec. 5, lots 1 to 4, incl., S1/2 N1/2, E1/2 SW1/4, SE1/4;	590.44
sec. 9, all;	640.00
sec. 27, E1/2;	320.00
sec. 34, E1/2.	320.00
T. 40 N., R. 15 W.,	
sec. 6, lots 1 thru 7, SE1/2 NE1/4, SE1/4 NW1/4, E1/2 SW1/4.	462.88
T. 40 N., R. 16 W.,	
sec. 33, N1/2 NE1/4, NW1/4;	240.00
sec. 34, N1/2 NW1/4.	80.00
T. 41 N., R. 2 W.,	
sec. 10, E1/2, E1/2 W1/2, SW1/4 NW1/4, W1/2 SW1/4	600.00
sec. 15, all	640.00
sec. 22, all	640.00
sec. 33, E1/2, E1/2 NW, SW1/4	560.00
sec. 34, N1/2, SW1/4.	480.00
T. 41 N., R. 5 W.,	
sec. 30, lots 3 and 4, E1/2 SW1/4;	158.71
sec. 31, lots 1 to 4, incl., E1/2, E1/2 W1/2.	638.52

APPENDIX 7 (CONTINUED) **PUBLIC LANDS IDENTIFIED FOR DISPOSAL BY SALE OR EXCHANGE**

EXCHANGE ONLY

Description	Acreage
T. 41 N., R. 6 W.,	
sec. 5, SW1/4 SE1/4, SE1/4 SW1/4;	80.00
sec. 8, W1/2 E1/2 E1/2, NW1/4 SE1/4;	120.00
sec. 25, E1/2 SE1/4;	80.00
sec. 33, S1/2;	320.00
sec. 34, S1/2;	320.00
sec. 35, NE1/4, S1/2.	480.00
T. 41 N., R. 7 W.,	
sec. 4, lots 3 and 4, S1/2 NW1/4, SW1/4 NE1/4, NE1/4 SW1/4, N1/2 SE1/4, SE1/4 SE1/4;	360.39
sec. 26, S1/2 NE1/4, S1/2;	400.00
sec. 35, all.	640.00
T. 41 N., R. 15 W.,	
sec. 31, E1/2;	320.00
sec. 35, All south of I-15	160.00
T. 42 N., R. 6 W.,	
sec. 32, lots 3 and 4, N1/2 SW1/4, W1/2 NE1/4 NW1/4 SE1/4, W1/2 NW1/4 SE1/4, W1/2 NW1/4 SE1/4 NW1/4 SE1/4, S1/2 SE1/4 NW1/4 SE1/4, NW1/4 SE1/4 NW1/4 SE1/4.	163.37
T. 42 N., R. 7 W.,	
sec. 33, lots 2, 3 and 4, S1/2	393.74
T. 42 N., R. 12 W.,	
sec. 31, all	436.39

APPENDIX 8

PRIVATE LANDS IDENTIFIED FOR ACQUISITION

MOHAVE COUNTY

Description	Acreage
T. 33 N., R. 9 W.,	
sec. 3, lots 1 to 4, incl., S1/2 N1/2, S1/2;	636.44
sec. 5, lots 1 to 4, incl., S1/2 N1/2, S1/2;	637.84
sec. 7, lots 1 to 4, incl., E1/2 W1/2, E1/2;	637.04
sec. 9, all;	640.00
sec. 11, all.	640.00
T. 33 N., R. 10 W.,	
sec. 1, lots 1 to 4, incl., S1/2 N1/2, S1/2.	641.00
T. 34 N., R. 9 W.,	
sec. 19, NW1/4 NE1/4;	40.00
sec. 31, lots 1 to 4, incl., E1/2 W1/2, E1/2;	639.32
sec. 33, all.	640.00
T. 34 N., R. 10 W.,	
sec. 35, all.	640.00
T. 40 N., R. 6 W.,	
sec. 17, S1/2.	320.00
T. 41 N., R. 5 W.,	
sec. 6, SE1/4 SW1/4;	40.00
sec. 7, E1/2 W1/2;	160.00
sec. 18, lot 2, E1/2 NW1/4.	119.41
T. 41 N., R. 6 W.,	
sec. 5, SE1/4 NW1/4, NE1/4 SW1/4;	80.00
sec. 11, E1/2 E;	160.00
sec. 13, E1/2 NW1/4, NW1/4 NW1/4;	120.00
sec. 14, N1/2 NE1/4.	80.00
T. 41 N., R. 7 W.,	
sec. 4, W1/2 SW1/4, SE1/4 SW1/4, SW1/4 SE1/4;	160.00
sec. 5, lots 1 and 2, S1/2 NE1/4, NE1/4 SE1/4, S1/2 SE;	280.19
sec. 8, NE1/4 NE1/4;	40.00
sec. 9, NE1/4.	160.00

COCONINO COUNTY

Description	Acreage
T. 36 N., R. 4 E.,	
sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2;	638.80
sec. 16, all.	640.00
T. 37 N., R. 4 E.	
sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2;	639.96
sec. 16, all;	640.00
sec. 32, all;	640.00
sec. 36, all.	640.00

APPENDIX 8 (CONTINUED)
PRIVATE LANDS IDENTIFIED FOR ACQUISITION
COCONINO COUNTY

Description	Acreage
T. 37 N., R. 5 E., sec. 16, all;	640.00
sec. 32, all.	640.00
T. 38 N., R. 3 E. sec. 2, lots 1 and 2, S1/2 NE1/4.	160.24
T. 38 N., R. 4 E., sec. 16, all;	640.00
sec. 32, all;	640.00
sec. 36, all.	640.00
T. 38 N., R. 5 E., sec. 5, patented mining claim described by Mineral Survey 2118A;	14.63
secs. 5 and 6, patented mining claim described by Mineral Survey 2118B;	4.98
sec. 6, lots 1 and 2, SW1/4 NE1/4, NE1/4 SW1/4;	160.72
sec. 8, lot2;	31.63
secs. 8 and 9, patented mining claim described by Mineral Survey 2141.	17.03
sec. 31, NW1/4 SE1/4;	40.00
sec. 32, all;	640.00
sec. 36, S1/2 SW1/4.	80.00
T. 38 N., R. 6 E., sec. 16, all.	640.00
T. 39 N., R. 5 E., sec. 16, SE1/4 SE1/4;	40.00
sec. 17, all;	640.00
sec. 18, lots 1 to 4, incl., E1/2 E1/2 W1/2.	630.36
T. 39 N., R. 7 E., sec. 7, a portion of N1/2 SW1/4 SE1/4 (south of highway 89A);	3.95
sec. 18, a portion of NE1/4 NW1/4 (south of highway 89A).T. 40 N., R. 1 E.,	4.00
T. 40N., R.1E., sec. 16, all.	640.00
T. 40 N., R. 3 E., sec. 36, SE.	160.00
T. 40 N., R. 5 E., sec. 1, lots 1 to 4, incl., S1/2 N1/2, S1/2;	644.76
sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2;	643.20
sec. 11, all;	640.00
sec. 12, all;	640.00
sec. 25, all;	640.00
sec. 36, all.	640.00
T.40 N., R.6E., sec. 31, SW1/4 NE1/4, SE1/4 NW1/4, NE1/4 SW1/4, NW1/4 SE1/4	160.00

APPENDIX 8 (CONTINUED)
STATE LANDS IDENTIFIED FOR ACQUISITION
COCONINO COUNTY

Description	Acreage
T. 40 N., R. 6 E.,	
sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2;	646.84
sec. 29, S1/2 S1/2;	160.00
sec. 30, lots 1 to 4, incl., E1/2, E1/2 W1/2;	625.00
sec. 31, lots 1 to 4, incl., E1/2 E1/2, NW1/4 NE1/4, NE1/4 NW1/4, SE1/4 SW1/4, SW1/4 SE1/4;	466.00
sec. 32, all.	640.00
T. 41 N., R. 1 E.,	
sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2;	639.20
sec. 16, all;	640.00
sec. 32, SE1/4.	160.00
T. 41 N., R. 2 E.,	
sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2;	639.76
sec. 16, all;	640.00
sec. 32, all;	640.00
sec. 36, all.	640.00
T. 41 N., R. 3 E.,	
sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2;	640.08
sec. 16, all;	640.00
sec. 32, all;	640.00
sec. 36, all.	640.00
T. 41 N., R. 4 E.,	
sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2;	639.08
sec. 32, all;	640.00
sec. 36, all.	640.00
T. 41 N., R. 5 E.,	
sec. 32, all;	640.00
sec. 35, all;	640.00
sec. 36, all.	640.00
T. 42 N., R. 1 E.,	
sec. 36, lots 1 to 4, incl., S1/2.	478.84
T. 42 N., R. 2 E.,	
sec. 32, lots 1 to 4, incl., S1/2;	476.76
sec. 36, lots 1 to 4, incl., S1/2.	471.36
T. 42 N., R. 3 E.,	
sec. 32, lots 1 to 4, incl., S1/2.	315.28
T. 42 N., R. 6 E.,	
sec. 36, lots 1 to 4, incl., S1/2.	481.68

APPENDIX 8 (CONTINUED)
STATE LANDS IDENTIFIED FOR ACQUISITION
COCONINO COUNTY

Description	Acreage
T. 39 N., R. 1 W., sec. 24, W1/2 NW1/4, NW1/4 SW1/4; sec. 32, all.	120.00 640.00
T. 40 N., R. 1 W., sec. 16, all; sec. 32, all.	640.00 640.00
T. 40 N., R. 2 W., sec. 32, W1/2, SE1/4; sec. 36, all.	480.00 640.00
T. 41 N., R. 1 W., sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2; sec. 16, all; sec. 36, all.	640.28 640.00 640.00
Comprising 34,953.84 acres in Coconino County.	

MOHAVE COUNTY

Description	Acreage
T. 32 N., R. 12 W., sec. 2, N1/2 SE1/4.	80.00
T. 33 N., R. 11 W., sec. 16, all.	640.00
T. 33 N., R. 12 W., sec. 36, all.	640.00
T. 33 N., R. 14 W., sec. 36, SE1/4 SE1/4.	40.00
T. 33 N., R. 15 W., sec. 2, lots 1 to 4, incl., SE1/4 NE1/4, S1/2 NW1/4, S1/2.	600.40
T. 34 N., R. 7 W., sec. 16, all; sec. 32, all.	640.00 640.00
T. 34 N., R. 8 W., sec. 16, N1/2 SW1/4;	80.00
T. 34 N., R. 9 W., sec. 32, all.	640.00

APPENDIX 8 (CONTINUED)
STATE LANDS IDENTIFIED FOR ACQUISITION
MOHAVE COUNTY

Description	Acreage
T. 34 N., R. 10 W., sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2; sec. 16, all; sec. 32, all; sec. 36, all.	641.94 640.00 640.00 640.00
T. 34 N., R. 11 W., sec. 32, W1/2 NE1/4, NW1/4.	240.00
T. 34 N., R. 12 W., sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2; sec. 16, all; sec. 36, all.	630.52 640.00 640.00
T. 34 N., R. 13 W., sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2; sec. 16, all.	626.96 640.00
T. 34 N., R. 14 W., sec. 32, SW1/4 SW1/4.	40.00
T. 34 N., R. 15 W., sec. 2, lot 4, S1/2 NW1/4, N1/2 SE1/4, SW1/4 SE1/4.	237.42
T. 35 N., R. 5 W., sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2.	639.96
T. 35 N., R. 6 W., sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2.	640.28
T. 35 N., R. 7 W., sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2.	638.64
T. 35 N., R. 8 W., sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2; sec. 32, NW1/4, N1/2 SW1/4.	640.08 240.00
T. 35 N., R. 9 W., sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2; sec. 16, all; sec. 18, SW1/4 NE1/4, NE1/4 NW1/4, E1/2 SE1/4; sec. 19, NE1/4, E1/2 NW1/4, N1/2 SE1/4; sec. 20, W1/2 NW1/4, NW1/4 SW1/4; sec. 32, all; sec. 36, S1/2 NE1/4, NW1/4, N1/2 S1/2.	639.84 640.00 160.00 320.00 120.00 640.00 400.00

APPENDIX 8 (CONTINUED)
STATE LANDS IDENTIFIED FOR ACQUISITION
MOJAVE COUNTY

Description	Acreage
T. 35 N., R. 10 W.,	
sec. 5, lots 1 to 4, incl., S1/2 N1/2, S1/2;	643.76
sec. 16, all;	640.00
sec. 29, NW1/4;	160.00
sec. 30, W1/2 NE1/4;	80.00
sec. 32, all;	640.00
sec. 34, all;	640.00
sec. 36, all.	640.00
T. 35 N., R. 11 W.,	
sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2;	641.96
sec. 32, all;	640.00
sec. 36, all.	640.00
T. 35 N., R. 13 W.,	
sec. 16, SW1/4 SE1/4, E1/2 SE1/4;	120.00
sec. 36, N1/2, E1/2 SE1/4.	400.00
T. 35 N., R. 15 W.,	
sec. 16, SE1/4 NE1/4.	40.00
T. 36 N., R. 4 W.,	
sec. 2, W1/2 SW1/4.	80.00
T. 36 N., R. 6 W.,	
sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2;	624.00
sec. 16, all;	640.00
sec. 32, all;	640.00
sec. 36, all.	640.00
T. 36 N., R. 7 W.,	
sec. 16, all;	640.00
sec. 32, all.	640.00
T. 36 N., R. 8 W.,	
sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2;	635.00
sec. 16, all;	640.00
sec. 32, all;	640.00
sec. 36, all.	640.00
T. 36 N., R. 9 W.,	
sec. 16, N1/2 SW1/4, N1/2 SE1/4;	560.00
sec. 32, SW1/4 NE1/4, NW1/4 SE1/4;	80.00
sec. 36, S1/2 NE1/4, SE1/4 SW1/4, SE1/4.	280.00

APPENDIX 8 (CONTINUED)
STATE LANDS IDENTIFIED FOR ACQUISITION
MOJAVE COUNTY

Description	Acreage
T. 36 N., R. 10 W.,	
sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2;	638.20
sec. 5, lots 1 and 2, S1/2 NE1/4;	163.88
sec. 6, lots 1 and 2, S1/2 NE1/4;	165.59
sec. 8, all;	640.00
sec. 9, N1/2 SW1/4, W1/2 SE1/4;	560.00
sec. 10, N1/2 SW1/4 SW1/4;	360.00
sec. 16, N1/2, NW1/4 SW1/4, NE1/4 SE1/4, S1/2 S1/2;	560.00
sec. 17, all;	640.00
sec. 20, N1/2;	320.00
sec. 29, W1/2;	320.00
sec. 31, lots 1 to 4, incl., E1/2 W1/2, E1/2;	632.64
sec. 32, all;	640.00
sec. 36, all.	640.00
T. 36 N., R. 11 W.,	
sec. 2, lots 3 and 4, S1/2 NW1/4, S1/2;	489.30
sec. 15, all;	640.00
sec. 16, E1/2, NE1/4 SW1/4, S1/2 SW1/4;	440.00
sec. 22, all;	640.00
sec. 27, S1/2 NE1/4, NW1/4, S1/2;	560.00
sec. 28, all;	640.00
sec. 31, lots 1 to 4, incl., E1/2 W1/2, E1/2;	629.08
sec. 32 E1/2 NE1/4, SW1/4 NE1/4, W1/2, SE1/4;	600.00
sec. 36, all.	640.00
T. 36 N., R. 12 W.,	
sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2;	671.28
sec. 16, all;	640.00
sec. 32, all;	640.00
sec. 36, all.	640.00
T. 36 N., R. 13 W.,	
sec. 32, all;	640.00
sec. 36, all.	640.00
T. 36 N., R. 16 W.,	
sec. 4, S1/2;	320.00
sec. 8, all;	640.00
sec. 9, all;	640.00
sec. 16, W1/2 SE1/4;	80.00
sec. 32, all;	640.00
sec. 36, all.	640.00
T. 37 N., R. 4 W.,	
sec. 16, E1/2, SW1/4.	480.00

APPENDIX 8 (CONTINUED)
STATE LANDS IDENTIFIED FOR ACQUISITION
MOJAVE COUNTY

Description	Acreage
T. 37 N., R. 5 W., sec. 32, all.	640.00
T. 37 N., R. 7 W., sec. 2, lots 1 to 4, incl., S1/2 NW1/4; sec. 36, SE1/4 SE1/4.	240.00 40.00
T. 37 N., R. 8 W., sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2; sec. 16, all; sec. 32, all; sec. 36, all.	640.76 640.00 640.00 640.00
T. 37 N., R. 9 W., sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2; sec. 10, E1/2; sec. 16, all; sec. 32, all; sec. 36, all.	640.72 320.00 640.00 640.00 640.00
T. 37 N., R. 10 W., sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2; sec. 10, S1/2; sec. 15, all; sec. 16, all; sec. 21, all; sec. 22, all; sec. 32, all.	670.32 320.00 640.00 640.00 640.00 640.00 640.00
T. 37 N., R. 11 W., sec. 16, N1/2, SW1/4, W1/2 SE1/4, SE1/4 SE1/4; sec. 32, all; sec. 36, all.	600.00 640.00 640.00
T. 37 N., R. 12 W., sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2; sec. 36, N1/2, SW1/4, E1/2 SE1/4, SW1/4 SE1/4.	643.04 600.00
T. 37 N., R. 13 W., sec. 16, all; sec. 32, all; sec. 36, all.	640.00 640.00 640.00
T. 37 N., R. 14 W., sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2; sec. 16, all; sec. 32, all.	640.84 640.00 640.00

APPENDIX 8 (CONTINUED)
STATE LANDS IDENTIFIED FOR ACQUISITION
MOJAVE COUNTY

Description	Acreage
T. 38 N., R. 5 W.,	
sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2;	638.24
sec. 15, N1/2, E1/2 SW1/4, SW1/4 SW1/4, SE1/4;	600.00
sec. 16, all;	640.00
sec. 21, all;	640.00
sec. 22, all;	640.00
sec. 32, all;	640.00
sec. 36, all.	640.00
T. 38 N., R. 6 W.,	
sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2;	637.84
sec. 4, lot 4, S1/2 N1/2, S1/2;	518.84
sec. 5, lots 1 to 4, incl., S1/2 N1/2, S1/2;	633.56
sec. 6, lots 1 to 7, incl., S1/2 NE1/4, SE1/4 NW1/4, E1/2 SW1/4, SE1/4;	622.87
sec. 11, all;	640.00
sec. 12, all;	640.00
sec. 16, all;	640.00
sec. 32, all;	640.00
sec. 36, all.	640.00
T. 38 N., R. 7 W.,	
sec. 36, W1/2 SE1/4.	80.00
T. 38 N., R. 8 W.,	
sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2;	641.80
sec. 16, all;	640.00
sec. 32, all;	640.00
sec. 36, all.	640.00
T. 38 N., R. 9 W.,	
sec. 16, N1/2 SW1/4, SW1/4 SW1/4;	120.00
sec. 32, all;	640.00
sec. 36, N1/2 NW1/4, W1/2 SW1/4, W1/2 SE1/4, SE1/4 SE1/4.	280.00
T. 38 N., R. 10 W.,	
sec. 2, lot 1, S1/2;	359.74
sec. 16, W1/2.	320.00
T. 38 N., R. 12 W.,	
sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2;	645.72
sec. 10, all;	640.00
sec. 36, all.	640.00
T. 39 N., R. 4 W.,	
sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2;	640.16
sec. 13, all;	640.00
sec. 14, E1/2;	320.00
sec. 16, all.	640.00

APPENDIX 8 (CONTINUED)
STATE LANDS IDENTIFIED FOR ACQUISITION
MOJAVE COUNTY

Description	Acreage
T. 39 N., R. 5 W.,	
sec. 32, all;	640.00
sec. 36, all.	640.00
T. 39 N., R. 6 W.,	
sec. 14, W1/2, SE1/4;	480.00
sec. 29, all;	640.00
sec. 31, lots 1 to 4, incl., E1/2, E1/2 W1/2;	631.60
sec. 32, all;	640.00
sec. 36, all.	640.00
T. 39 N., R. 8 W.,	
sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2;	623.72
sec. 16, all;	640.00
sec. 32, all;	640.00
sec. 36, all.	640.00
T. 39 N., R. 9 W.,	
sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2;	628.24
sec. 16, all;	640.00
sec. 32, all;	640.00
sec. 36, all.	640.00
T. 39 N., R. 12 W.,	
sec. 36, all.	640.00
T. 39 N., R. 13 W.,	
sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2.	639.08
T. 40 N., R. 3 W.,	
sec. 32, all.	640.00
T. 40 N., R. 7 W.,	
sec. 16, all.	640.00
T. 40 N., R. 9 W.,	
sec. 16, all;	640.00
sec. 32, N1/2;	320.00
sec. 36, N1/2, N1/2SW1/4, NE1/4 SE1/4.	440.00
T. 40 N., R. 10 W.,	
sec. 16, N1/2 NW1/4, E1/2 SW1/4, SW1/4 SW1/4, SE1/4;	360.00
sec. 32, SW1/4 NE1/4, NW1/4.	200.00
T. 40 N., R. 11 W.,	
sec. 16, NE1/4 NE.	40.00

APPENDIX 8 (CONTINUED)
STATE LANDS IDENTIFIED FOR ACQUISITION
MOJAVE COUNTY

Description	Acreage
T. 40 N., R. 12 W., sec. 16, SE1/4.	160.00
T. 40 N., R. 15 W., sec. 16, S1/2 NW1/4 NE1/4, SW1/4 NE1/4, W1/2 SE1/4 NE1/4, SE1/4.	340.00
T. 41 N., R. 7 W., sec. 8, S1/2; sec. 16, all; sec. 32, all.	320.00 640.00 640.00
T. 41 N., R. 8 W., sec. 19, E1/2; sec. 36, all.	320.00 640.00
T. 41 N., R. 9 W., sec. 2, lots 1 to 4, incl., S1/2 N1/2, S1/2; sec. 12, all; sec. 16, all; sec. 17, all; sec. 32, all; sec. 36, all.	639.92 640.00 640.00 640.00 640.00 640.00
T. 41 N., R. 13 W., sec. 32, all; sec. 36, all.	640.00 640.00
T. 41 N., R. 15 W., sec. 30, lots 1 to 4, incl., SW1/4 SW1/4 NE1/4, W1/2 E1/2 NW1/4, SE1/4 SE1/4 NW1/4, E1/2 SW1/4, SW1/4 NE1/4 SE1/4, W1/2 NW1/4 SE1/4, SE1/4 NW1/4 SE1/4, SW1/4 SE1/3, W1/2 SE1/4 SE1/4.	398.84
T. 42 N., R. 7 W., sec. 32, lots 1 to 4, incl., S1/2.	416.48
T. 42 N., R. 8 W., sec. 31, lots 1 to 6, incl., E1/2 SW1/4, SE1/4; sec. 32, lots 1 to 4, incl., S1/2.	410.96 410.40
T. 42 N., R. 9 W., sec. 32, lots 1 to 4, incl., S1/2; sec. 36, lots 1 to 4, incl., S1/2.	406.52 408.72
T. 42 N., R. 16 W., sec. 36, lots 1 to 3, incl.	90.71
Comprising 108,755.10 acres in Mohave County	

APPENDIX 8 (CONTINUED)
STATE LANDS IDENTIFIED FOR ACQUISITION
COCONINO AND MOHAVE COUNTIES

Description	Acreage
T. 38 N., R. 3 W., sec. 16, all	640.00
sec. 32, lot 1, NE1/4, W1/2, N1/2 SE1/4, SW1/4 SE1/4	525.00
Comprising 1,279,41 acres in Coconino and Mohave Counties.	
The public land will be conveyed under the following terms and conditions.	
1. Subject to rights of record as follows:	
Roads: A 18951 through A 18956, A 18557	
Transmission lines: A 10117, A 16639, AR 017703, A 6016	

ARIZONA STRIP LANDS (PROPOSED STATE ACQUISITIONS)
NOT YET IN EXCHANGE PACKAGE

GILA AND SALT RIVER MERIDIAN, ARIZONA

Description	Acreage
T. 39 N., R. 9 W., sec. 2, lots 1 to 4, incl., S1/2 N1/2 S1/2;	628.24
sec. 16, all;	640.00
sec. 32, all;	640.00
sec. 36, all.	640.00
T. 39 N., R. 13 W., sec. 2, lots 1 to 4, incl., S1/2 N1/2 S1/2.	639.08
T. 40 N., R. 3 W., sec. 32, all.	640.00
T. 40 N., R. 7 W., sec. 16, all.	640.00
T. 40 N., R. 9 W., sec. 16, all;	640.00
sec. 32, N1/2;	320.00
sec. 36, N1/2 N1/2 SW1/4, NE1/4 SE1/4.	440.00
T. 40 N., R. 10 W., sec. 32, SW1/4 NE1/4, NW1/4.	200.00
T. 40 N., R. 12 W., sec. 16, SE1/4.	160.00

APPENDIX 8 (CONTINUED)
ARIZONA STRIP LANDS (PROPOSED STATE ACQUISITIONS)
NOT YET IN EXCHANGE PACKAGE
GILA AND SALT RIVER MERIDIAN

Description	Acreage
T. 40 N., R. 15 W., sec. 16, S1/2 NW1/4 NE1/4, SW1/4 NE1/4, W1/2 SE1/4 NE1/4, SE1/4.	240.00
T. 41 N., R. 7 W., sec. 8, S1/2;	320.00
sec. 16, all;	640.00
sec. 32, all.	640.00
T. 41 N., R. 8 W., sec. 36, all.	640.00
T. 41 N., R. 9 W., sec. 2, lots 1 to 4, incl., S1/2 N1/2 S1/2;	639.92
sec. 12, all;	640.00
sec. 16, all;	640.00
sec. 17, all;	640.00
sec. 32, all;	640.00
sec. 36, all.	640.00
T. 41 N., R. 13 W., sec. 32, all;	640.00
sec. 36, all.	640.00
T. 41 N., R. 15 W., sec. 30, lots 1 to 4, incl., SW1/4 SW1/4 NE1/4, W1/2 E1/2 NW1/4, SE1/4 SE1/4 NW1/4, E1/2 SW1/4, SW1/4 NE1/4 SE1/4, W1/2 NW1/4 SE1/4, SE1/4 NW1/4 SE1/4, SW1/4 SE1/4, W1/2 SE1/4 SE1/4.	358.84
T. 42 N., R. 7 W., sec. 32, lots 1 to 4, incl., S1/2.	416.48
T. 42 N., R. 8 W., sec. 31, lots 1 to 6, incl., E1/2 SW1/4 (surface only);	410.96
sec. 32, lots 1 to 4, incl., S1/2.	410.40
T. 42 N., R. 9 W., sec. 32, lots 1 to 4, incl., S1/2;	406.52
sec. 36, lots 1 to 4, incl., S1/2.	408.72
T. 42 N., R. 716W., sec. 36, lots 1 to 3, incl.	90.71

APPENDIX 9

AVAILABILITY OF LANDS FOR FLUID LEASABLE MINERAL ACTIVITY RELATIVE TO RESOURCE POTENTIAL

ALTERNATIVE 1

Category	Potential			Total
	Low	Moderate	High	
<u>Category A</u> Areas open to lease subject to standard terms and conditions.	1,208,500	1,989,800	0	3,198,300
<u>Category B</u> Areas open to lease subject to subject to seasonal restrictions.	0	0	0	0
<u>Category C</u> Areas open to lease subject to subject to no surface occupancy.	0	0	0	0
<u>Category D</u> Areas closed to leasing.	155,600	110,200	0	265,800
Total	1,364,100	2,100,000	0	3,464,100*

*The total number of acres used in this table reflects the total number of surface acres in the Arizona Strip District including BLM, state, and private. This has been done for comparison purposes only so that a consistent number of total acres may be used in the tables without regard to proposed land ownership adjustments.

FLUID MINERAL LEASING CATEGORIES

Category A

Under the no action alternative, approximately 3,198,300 acres would be open to lease subject to the standard lease terms and conditions.

Category B

There would be no areas open to lease subject to seasonal restrictions.

Category C

There would be no areas open to lease subject to the no surface occupancy stipulation.

Category D

In order to protect wilderness values, eight areas encompassing some 265,600 acres on the Arizona Strip District were designated as wilderness by Congress in 1984. These areas were withdrawn from mineral leasing at that time. In addition, approximately 200 acres are withdrawn from mineral leasing for the protection of a hybrid oak which was thought to occur on the east slope of the Virgin Mountains.

APPENDIX 10

AVAILABILITY OF LANDS FOR FLUID LEASABLE MINERAL ACTIVITY RELATIVE TO RESOURCE POTENTIAL

ALTERNATIVE 2

Category	Potential			Total
	Low	Moderate	High	
<u>Category A</u> Areas open to lease subject to standard terms and conditions.	848,200	1,942,600	0	2,790,800
<u>Category B</u> Areas open to lease subject to seasonal restrictions.	269,900	0	0	269,900
<u>Category C</u> Areas open to lease subject to no surface occupancy.	90,400	44,100	0	137,800
<u>Category D</u> Areas closed to leasing.	155,600	110,000	0	265,600
Total	1,364,100	2,100,000	0	3,464,100*

*The total number of acres used in this table reflects the total number of surface acres in the Arizona Strip District including BLM, state, and private. This has been done for comparison purposes only so that a consistent number of total acres may be used in the tables without regard to proposed land ownership adjustments.

FLUID MINERAL LEASING CATEGORIES

Category A

Under the preferred alternative, approximately 2,790,800 acres would be open to lease subject to standard lease terms and conditions.

Category B

In order to protect peregrine falcon during the nesting season, exploration, drilling and other surface-disturbing activities will be allowed only during the period from August 1 through March 1. This limitation does not apply to the maintenance and operation of producing wells. Exceptions to this limitation in any year may be specifically authorized in writing by the authorized officer of the federal surface management agency if it is shown to the satisfaction of the authorized officer that no adverse impacts to peregrine falcon would occur. This limitation would apply to approximately 230,000 acres.

In order to protect bighorn sheep, exploration, drilling and other surface-disturbing activities will be allowed only during the period from June 1 through November 30. This limitation does not apply to the maintenance and operation of producing wells. Exceptions to this limitation in any year may be specifically authorized in writing by the authorized officer of the federal surface management agency if it is shown to the satisfaction of the authorized officer that adverse impacts to the bighorn sheep would not occur. This limitation would apply to approximately 39,900 acres.

APPENDIX 10 (CONTINUED)**AVAILABILITY OF LANDS FOR FLUID LEASABLE MINERAL ACTIVITY
RELATIVE TO RESOURCE POTENTIAL****Category C**

In order to protect important scenic values, no surface occupancy or other surface disturbance will be allowed within the Virgin River Gorge scenic withdrawal. Exceptions to this limitation may be specifically authorized in writing by the authorized officer of the federal surface management agency if it is shown to the satisfaction of the authorized officer that the proposed disturbance or occupancy will not substantially impair the visual resource of the area. This limitation would apply to approximately 3,300 acres.

In order to protect important scenic values, no surface occupancy or other surface disturbance will be allowed within Kanab Creek, Grama Canyon, or the Virgin River Gorge. Exceptions to this limitation may be specifically authorized in writing by the authorized officer of the federal surface management agency if it is shown to the satisfaction of the authorized officer that the proposed disturbance or occupancy will not substantially impair the visual resources of the area. This limitation would apply to approximately 23,400 acres.

In order to protect important scenic values, no surface occupancy or other surface disturbance will be allowed on slopes in excess of 30 percent along or within the following areas: Hurricane Cliffs; Diamond Butte; upper and lower Grand Wash Cliffs; Parashant, Andrus, and Dansil canyons; and the Moccasin Mountains. Exceptions to this limitation may be specifically authorized in writing by the authorized officer of the federal surface management agency if it is shown to the satisfaction of the authorized officer that the proposed disturbance or occupancy will not impair the visual resources of the area. This limitation would apply to approximately 114,400 acres.

Category D

In order to protect wilderness values, eight areas encompassing some 265,600 acres on the Arizona Strip District were designated as wilderness by Congress in 1984. These areas were withdrawn from mineral leasing at that time.

APPENDIX 11

AVAILABILITY OF LANDS FOR FLUID LEASABLE MINERAL ACTIVITY RELATIVE TO RESOURCE POTENTIAL

ALTERNATIVE 3

Category	Potential			Total
	Low	Moderate	High	
<u>Category A</u> Areas open to lease subject to standard terms and conditions.	848,200	1,942,600	0	2,790,800
<u>Category B</u> Areas open to lease subject to seasonal restrictions.	269,900	0	0	269,900
<u>Category C</u> Areas open to lease subject to no surface occupancy.	90,400	44,100	0	137,800
<u>Category D</u> Areas closed to leasing.	155,600	110,000	0	265,600
Total	1,364,100	2,100,000	0	3,464,100*

*The total number of acres used in this table reflects the total number of surface acres in the Arizona Strip District including BLM, state, and private. This has been done for comparison purposes only so that a consistent number of total acres may be used in the tables without regard to proposed land ownership adjustments.

FLUID MINERAL LEASING CATEGORIES

Category A

Under this alternative, approximately 2,505,100 acres would be open to lease subject to standard lease terms and conditions.

Category B

In order to protect peregrine falcon during the nesting season, exploration, drilling and other surface disturbing activities will be allowed only during the period from August 1 through March 1. This limitation does not apply to the maintenance and operation of producing wells. Exceptions to this limitation in any year may be specifically authorized in writing by the authorized officer of the federal surface management agency if it is shown to the satisfaction of the authorized officer that no adverse impacts to peregrine falcon would occur. This limitation would apply to approximately 230,000 acres.

In order to protect bighorn sheep, exploration, drilling and other surface- disturbing activities will be allowed only during the period from June 1 through November 30. This limitation does not apply to the maintenance and operation of producing wells. Exceptions to this limitation in any year may be specifically authorized in writing by the authorized officer of the federal surface management agency if it is shown to the satisfaction of the authorized officer that adverse impacts to the bighorn sheep would not occur. This limitation would apply to approximately 39,900 acres.

Category C

In order to protect the desert tortoise, no surface occupancy or other surface disturbance will be allowed within the Beaver Dam ACEC. Exceptions to this limitation in any year may be specifically authorized in writing by the authorized officer of the federal surface management agency if it is shown to the satisfaction of the authorized officer that adverse impacts to the desert tortoise would not occur. This restriction would apply to approximately 20,800 acres.

APPENDIX 11 (CONTINUED)

AVAILABILITY OF LANDS FOR FLUID LEASABLE MINERAL ACTIVITY RELATIVE TO RESOURCE POTENTIAL

Category C (Continued)

In order to protect identified cultural resources, no surface occupancy or other surface disturbance will be allowed within the Little Black Mountain, Witch Pool, and Nampawep ACECs, and the Paria Plateau SRMA. Exceptions to this limitation may be specifically authorized in writing by the authorized officer of the federal surface management agency if it is shown to the satisfaction of the authorized officer that the proposed disturbance or occupancy will not adversely affect the cultural resources or the integrity of interpretive sites. This limitation would apply to approximately 228,000 acres.

In order to protect identified cultural resources and endangered plant species, no surface occupancy or other surface disturbance will be allowed within the Johnson Spring, Lost Spring Mountain or Moonshine Ridge ACECs. Exceptions to this limitation may be specifically authorized in writing by the authorized officer of the federal surface management agency if it is shown to the satisfaction of the authorized officer that the proposed disturbance or occupancy will not adversely affect the cultural resources or the endangered plant species. This limitation would apply to approximately 17,800 acres.

In order to protect a federally listed endangered plant species and fragile saline soils, no surface occupancy or other surface disturbance will be allowed within the Fort Pierce ACEC. Exceptions to this limitation may be specifically authorized in writing by the authorized officer of the federal surface management agency if it is shown to the satisfaction of the authorized officer that the proposed disturbance or occupancy will not adversely affect the endangered plant species or fragile saline soils. This limitation would apply to approximately 3,600 acres.

In order to protect a federally listed endangered plant species, no surface occupancy or other surface disturbance will be allowed within the Marble Canyon ACEC. Exceptions to this limitation may be specifically authorized in writing by the authorized officer of the federal surface management agency if it is shown to the satisfaction of the authorized officer that the proposed disturbance or occupancy will not adversely affect the endangered plant species. This limitation would apply to approximately 15,500 acres.

In order to protect important scenic values, no surface occupancy or other surface disturbance will be allowed within the Virgin River Gorge scenic withdrawal. Exceptions to this limitation may be specifically authorized in writing by the authorized officer of the federal surface management agency if it is shown to the satisfaction of the authorized officer that the proposed disturbance or occupancy will not impair the visual resources of the area. This limitation would apply to approximately 3,300 acres.

In order to protect important scenic values, no surface occupancy or other surface disturbance will be allowed within Kanab Creek or Grama canyons. Exceptions to this limitation may be specifically authorized in writing by the authorized officer of the federal surface management agency if it is shown to the satisfaction of the authorized officer that the proposed disturbance or occupancy will not impair the visual resources of the area. This limitation would apply to approximately 20,000 acres.

In order to protect important scenic values, no surface occupancy or other surface disturbance will be allowed on slopes in excess of 30 percent along or within the following areas: Hurricane Cliffs; Diamond Butte; upper and lower Grand Wash Cliffs; Parashant, Andrus, and Dansil canyons; and the Mocassin Mountains. Exceptions to this limitation may be specifically authorized in writing by the authorized officer of the federal surface management agency if it is shown to the satisfaction of the authorized officer that the proposed disturbance or occupancy will not substantially impair the visual resources of the area. This limitation would apply to approximately 114,400 acres.

Category D

In order to protect wilderness values, eight areas encompassing some 265,600 acres in the Arizona Strip District were designated as wilderness by Congress in 1984. These areas were withdrawn from mineral leasing at that time.

APPENDIX 12

AVAILABILITY OF LANDS FOR FLUID LEASABLE MINERAL ACTIVITY RELATIVE TO RESOURCE POTENTIAL

ALTERNATIVE 4

CATEGORY	POTENTIAL			TOTAL
	LOW	MODERATE	HIGH	
<u>Category A</u> Areas open to lease subject to standard terms and conditions.	958,400	1,986,700	0	2,945,100
<u>Category B</u> Areas open to lease subject to seasonal restrictions.	250,100	0	0	250,100
<u>Category C</u> Areas open to lease subject to no surface occupancy.	0	3,300	0	3,300
<u>Category D</u> Areas closed to leasing.	155,600	110,000	0	265,600
Total	1,364,100	2,100,000	0	3,464,100*

*The total number of acres used in this table reflects the total number of surface acres in the Arizona Strip District including BLM, state, and private. This has been done for comparison purposes only so that a consistent number of total acres may be used in the tables without regard to proposed land ownership adjustments.

In order to protect wilderness values, eight areas encompassing some 265,600 acres in the Arizona Strip District were designated as wilderness by Congress in 1984. These areas were withdrawn from mineral leasing at that time.

FLUID MINERAL LEASING CATEGORIES

Category A

Under this alternative, approximately 2,945,100 acres would be open to lease subject to standard lease terms and conditions.

Category B

In order to protect peregrine falcon during the nesting season, exploration, drilling and other surface-disturbing activities will be allowed only during the period from August 1 through March 1. This limitation does not apply to the maintenance and operation of producing wells. Exceptions to this limitation in any year may be specifically authorized in writing by the authorized officer of the federal surface management agency if it is shown to the satisfaction of the authorized officer that no adverse impacts to peregrine falcon would occur. This limitation would apply to approximately 250,100 acres.

Category C

In order to protect important scenic values, no surface occupancy or other surface disturbance will be allowed within the Virgin River Gorge scenic withdrawal. Exceptions to this limitation may be specifically authorized in writing by the authorized officer of the federal surface management agency if it is shown to the satisfaction of the authorized officer that the proposed disturbance or occupancy will not substantially impair the visual resource of the area. This limitation would apply to approximately 3,300 acres.

Category D

APPENDIX 13

CULTURAL RESOURCE MANAGEMENT GUIDELINES

Manage For Information Potential

Cultural resources included under this objective are capable of contributing useful scientific, historic, or management information. This information potential is to be protected to the extent needed, by physical or administrative means, until the potential has been realized through appropriate study.

Cultural resources which would be managed for their information potential have one or both of the following characteristics:

1. They are suitable for scientific study using currently available research techniques, including study that would result in their physical alteration.
2. They are suitable for controlled experimental studies which would aid in the management of other cultural properties; studies, for example, that are aimed at understanding the effects of natural or human-caused impacts to cultural properties, effectiveness of protection or monitoring efforts and similar objectives.

Habitation, historic agricultural, resource utilization and socio-cultural site types (see page for detailed list) are known recorded properties in the RMP area. The existence of prehistoric agricultural site types is not well documented but they are believed to exist in the RMP area. Cultural properties that are found and are not specifically designated to one of the management objectives below would be managed for their information potential because they contain retrievable information that is important to developing an understanding of the cultural history of the RMP area and surrounding region.

Cultural properties to be managed for their information potential may be studied for one or a combination of the following:

- They are suitable for study for satisfying the needs of an academic research proposal.
- They are suitable for short or long-term establishment of archaeological field schools.
- They are subjects of data recovery designed to mitigate the impacts of a competing land use.
- They are suitable for monitoring the effects of natural or human-caused impacts to cultural properties.

Such studies must be in accordance with BLM-approved research designs, data recovery plans and recordation standards. Bureau and non-bureau personnel using cultural resources for this purpose must comply with the provisions of the Archaeological Resources Protection Act of 1979. Uses which will affect National Register-listed or -eligible properties will require consultation in accordance with 36 CFR 800 and applicable Memoranda of Agreement.

The information potential of cultural resources managed under this objective will be protected through monitoring of selected geographical areas or high-value sites, and occasional monitoring of others. Stabilization, fencing, signing, electronic, aerial and ground surveillance as well as public awareness efforts will be employed to achieve this objective.

Manage for Conservation

Cultural resources included under this objective have overriding scientific prehistoric and/or historic importance. Because of scarcity, a research potential that surpasses the current state of the art, singular historic or architectural interest or comparable reasons, such resources are not considered appropriate subjects of studies which would result in their physical alteration. They will be managed to maintain their present condition and protect them from potentially conflicting land or resource uses.

APPENDIX 13 (CONTINUED)

CULTURAL RESOURCE MANAGEMENT GUIDELINES

The National Register listed archaeological site known as Antelope Cave and the National Register eligible site known as Rock Canyon Shelter will be managed under the conservation objective. Both sites have been altered by both authorized research and by vandalism but it is believed that intact deposits may remain that with advanced methods of data collection and analysis may yield new information that has potential to advance our knowledge of the Archaic to Formative transition. All similar relatively undisturbed cave or rock shelter sites which may be discovered or acquired in the RMP area will also be managed for conservation, because sites from this period of transition are rare.

Archaeological sites from selected classes of cultural properties representing transition time periods may be identified in future activity plans to create a data bank to be managed under this objective. The purpose is to preserve these sites for future study when analytical techniques are more sophisticated and the research contributions of these resources can be maximized. Management emphasis will be placed on protecting these resources with their cultural material in place. Only non-destructive studies and analysis will be permitted.

The management objective for these cultural properties may be changed from conservation to information potential upon determining that their research values can be realized through state of the art methods of data collection and analysis. Such studies would then be subject to the standards and provisions identified under management for information potential.

Cultural properties of this class may be managed under the public values objective if their information potential has been achieved to the point where educational, recreational and other public values would not result in the loss of important scientific values.

Interpretive efforts such as trails, signs and brochures may be considered for Antelope Cave after the access to the interior of the cave has been controlled. Other interpretive efforts for cultural properties under this management category may be considered but would not have a high priority.

Measures to conserve these cultural resources for the future will include but not be limited to high-priority status for monitoring (electronic, aerial and ground) and evaluating access that does not conflict with other resource uses. Stabilization efforts, such as erosion control, will be implemented as needed.

Manage for Public Values

Cultural resources included under this objective are particularly useful for their sociocultural, educational, recreation or other public values. Their locations will be managed in a manner that gives adequate consideration to these values.

Cultural resources which would generally be managed for public values possess one or both of the following characteristics:

1. They are perceived by a social and/or cultural group as having attributes which contribute to maintaining the heritage or existence of that group. Locations of traditional cultural or religious importance to Native Americans or Mormons, for example, would be of this kind.
2. They are appropriate for interpretive development as exhibits in place, for supervised participation in scientific or historic studies by members of amateur archaeological societies and for educational and recreational uses by members of the general public. Cultural resources of this kind which have been identified in the RMP area are Little Black Mountain, Pinenut, West Bench Pueblo, Arkansas, Witch Pool, Nixon Sawmill/Uinkaret Pueblo and Paiute Cave. Cultural ACECs not represented by one of the above sites if designated (Lost Spring, Moonshine Ridge and Johnson Spring), will include at least one site managed with public use as an objective.

Accessibility, public demand, public sensitivity, cost-effectiveness and feasibility will be considered, among other factors, in managing cultural properties of this kind for educational or recreational use. Management might include signs, self-guided interpretive trails, brochures, supervised archaeological excavation, mapping and other forms of recordation, stabilization, visitor facilities, on-site public tours and long-term group stewardships.

APPENDIX 13 (CONTINUED)

CULTURAL RESOURCE MANAGEMENT GUIDELINES

Cultural resources identified by contemporary social and/or cultural groups would take into account the concerns and sensitivities of the groups involved. Information on such resources would be protected from public disclosure to the extent allowed by statute.

Management of cultural resources for public values will be carried out with an awareness of any information potential such resources might possess. Any development of a cultural property for educational or recreational use will be done in such a manner as to safeguard important scientific information and will be subject to the requirements of appropriate laws and regulations.

Activity Plans

Cultural resources in the RMP area will be allocated to specific uses in subsequent cultural resource management plans. Activity plans containing detailed management prescriptions for selected cultural properties will be developed after use allocations have been made. Cultural properties to be managed for conservation will receive the highest priority for activity planning. Areas for which activity plans will be prepared are in priority order: Witch Pool, Arkansas (Nampawep), Lost Spring Mountain, Moonshine Ridge, Johnson Spring, Mt. Trumbull and Paria Plateau.

Classes of Cultural Properties in the RMP Area

- | | |
|---|--|
| <p>1. Habitat (includes, not limited to):</p> <ul style="list-style-type: none"> Prehistoric villages/towns Rock shelters and caves Historic villages/towns Pueblos Camps Pithouses Cabins | <p>3. Resource Utilization (includes, not limited to):</p> <ul style="list-style-type: none"> Prehistoric artifact scatters Mines Historic artifact scatters Roasting pits Trash middens Hearths Quarries Ovens Storage cists |
| <p>2. Agriculture (includes, not limited to):</p> <ul style="list-style-type: none"> Prehistoric terraces Water control devices Historic terraces Ranching facilities | <p>4. Sociocultural (includes, not limited to):</p> <ul style="list-style-type: none"> Historic inscriptions Prehistoric rock art Community rooms Religious Mortuary Historic roads and trails Kivas Prehistoric trails |

APPENDIX 14

WATERSHED CONDITION CATEGORIZATION OF GRAZING ALLOTMENTS WITHIN ARIZONA STRIP DISTRICT

CATEGORY I	CATEGORY II	CATEGORY IV
Atkin Well (N) - 5207	Badger Creek - 5341	Antelope - 5206
Buffalo Tank - 5335	Beaver Dam - 4828	Antelope Spring - 5210
Cedar Knoll - 5318	Black Canyon - 4837	Atkin Well (S) - 5207
Cedar Wash - 4842	Black Knoll - 5215	Belnap - 4849
Cram - 5333	Blake Pond - 4813	Belnap West - 4822
Dripping Spring - 4818	Bush Head - 5329	Big Spring Pipeline - 4870
Duncan Tank - 4820	Button - 5308	Black Rock - 4841
Faught Place - 5268	Canaan Point - 5205	Cedar - 5258
Grama Point - 5233	Cane Beds - 5212	Chatterly - 5307
Grama Springs - 5225	Cedar Mountain (Utah)	Cottonwood - 4809
Gulch - 5230	Clay Spring - 4845	Coyote - 5327
Hacks Reservoir - 5257	Clayhole - 5215	Crosby Tank - 5219
Heaton Findlay - 5237	Cove - 5204	Eight Mile Pass - 5304
Highway - 5412	Cowboy Butte - 5310	Fern Tank - 5217
Home Ranch - 4855	Coyote Spring - 4805	Flat Top - 5206
Hurricane Cliffs - 5251	Diamond Butte - 4833	Franks Reservoir - 5325
Iverson - 4834	Ferrin - 5246	Fuller Road - 5324
Jacob Canyon - 5317	Ferry Swale - 5336	Glazier Dam - 5202
Kanab Creek - 5321	Gunsight - 5320	Grassie Mountain - 4825
Kanab Gulch - 5224	Harris Well - 5238	Hacks - 5227
Lambing - 4838	Hat Knoll - 4837	Hidden Spring - 4803
Last Chance - 4815	Highway - 5309	Highway - 5306
Little Tank - 4853	Home Ranch - 5329	Imlay - 4817
Littlefield Community - 4827	Homestead - 5253	Ivanpah - 4858
Littlefield Free-Use - 4843	House Rock - 5331	Jump Canyon - 4801
Lizard - 4857	Jackson Tank - 4830	June Tank - 5221
Meeks - 5258	Johnson Run - 5319	Lamb Tank - 5257
Mesquite Community - 4832	Lee's Ferry - 5337	Link Spring - 4819
Mosby - 4835	Little Wolf - 4814	Mainstreet (summer) - 4808
Mosby-Nay - 4836	Loco Point - 5260	Mt. Logan - 5218
Mule Canyon - 4821	Lost Spring Gap - 5300	Mud & Cane - 4850
Mustang Spring - 4859	Lower Hurricane - 4837	Muggins Flat - 5313
Pa's Pocket - 4848	Mainstreet (winter) - 4808	Penn's Well - 4852
Pakoon - 4802	Moonshine - 5237	Pipe Valley - 5242
Pakoon Spring - 4800	Mormon Well - 4844	Scotties Seep - 5236
Pigeon Tank - 5322	Mt. Trumbull - 4826	Shuttleworth - 5306
Purgatory - 4831	Parashant - 4829	Sullivan Tank - 4816
Rock Canyon - 5200	Pat's Pond - 4862	Sunshine Point - 5218
Rock Canyon Tank - 5319	Pine - 5329	Swapp Tank - 5248
South Bullrush - 5234	Pocum Tank - 4840	Temple Trail - 5216
Spendlove - 5215	Pratt Tank - 5314	Tuweep - 5220
Sullivan Canyon - 4810	Quail Canyon - 4857	Valley Wash - 5234
Sunshine - 4863	Rider - 5305	Wildcat - 4854
Sunshine Tank - 5247	Rock Pockets - 5213	Wolfhole Canyon - 4811
Tassi - 4851	Rosenberry - 4846	Wolfhole Lake - 4823
Toquer Tank - 4861	Sage - 5311	Water Canyon - 5257
Shinarump - 5301	Soap Creek - 5332	Spooks Knoll - 5319
Stateline - 5244	Suicide - 5322	Two Mile - 5328
Wells - 5208	White Pocket - 5243	White Sage - 5349
Whiterock Soapstone - 4804	Wild Band - 5223	Wolfhole Mountain - 4839
Yellowstone - 5213		

APPENDIX 14 (CONTINUED) **WATERSHED CONDITION CATEGORIZATION** **OF GRAZING ALLOTMENTS WITHIN ARIZONA STRIP DISTRICT**

APPROXIMATE CATEGORY	DESCRIPTION	FEDERAL ACREAGE
I:	Watershed units are in satisfactory erosion condition and are not especially susceptible to wind and water erosion	808,000
II:	Watershed units are in satisfactory erosion condition but are susceptible to wind and water erosion following disturbance	1,226,000
IV:	Watershed units currently are in unsatisfactory erosion condition and the soils would be responsive to treatment	1,188,000
	There are no Category III watershed areas	



APPENDIX 15

STATE SPECIAL STATUS ANIMALS AND PLANTS THAT OCCUR OR COULD OCCUR IN RMP AREA

Animals

Woundfin minnow	<i>Plagiopterus argentissimus</i>
Virgin River spinedace	<i>Lepidomeda mollispinus mollispinus</i>
Virgin River roundtail chub	<i>Gila robusta seminuda</i>
Relict leopard frog	<i>Rana onca</i>
Common black hawk	<i>Buteogallus anthracinus anthracinus</i>
Southern bald eagle	<i>Haliaeetus l. leucocephalus</i>
Osprey	<i>Pandion haliaetus</i>
American peregrine falcon	<i>Falco peregrinus anatum</i>
Southern spotted owl	<i>Strix occidentalis lucida</i>
Desert tortoise	<i>Xerobates agassizii</i>
Western skink	<i>Eumeces skiltonianus</i>
Snowy egret	<i>Egretta thula brewsteri</i>
American bittern	<i>Botancus lentiginosus</i>
Northern goshawk	<i>Accipiter gentilis</i>
Ferruginous hawk	<i>Buteo regalis</i>
Swainson's hawk	<i>Buteo swainsoni</i>
Western snowy plover	<i>Charadrius alexandrinus nivosus</i>
Yellow-billed cuckoo	<i>Coccyzus americanus</i>
Belted kingfisher	<i>Megaceryle alcyon</i>
Red bat	<i>Lasiurus borealis</i>
Spotted bat	<i>Euderma maculatum</i>
Gray wolf	<i>Canus lupus</i>
Willow flycatcher	<i>Empidonax traillii</i>

Plants

Vagabond Parsnip	<i>Aletes macdougali</i>
Parry Wild Parsley	<i>Lomatium parryi</i>
Narrowleaf Blue Star	<i>Amsonia tomentosa stenophylla</i>
Jones Blue Star	<i>Amsonia jonesii</i>
Hidden Horn Milkweed	<i>Asclepias cryptoceras</i>
Hooker Balsam Root	<i>Balsamorhiza hookeri</i>
Silverleaf Sunray	<i>Enceliopsis argophylla</i>
Nodesten Sunray	<i>Enceliopsis nudicalis</i>
Hopi Sunflower	<i>Helianthus anomalus</i>
Longsprine Cotton Thorn	<i>Tetradymia axillaris longispina</i>
Blackrock Ground Daisy	<i>Townsendia smithii</i>
Atwood Catseye	<i>Crypthantha atwoodii</i>
Hermit Catseye	<i>Crypthantha capitata</i>
Utah Corycactus	<i>Coryphantha missouriensis marstonii</i>
Yellow Beavertail	<i>Opuntia basilaris avrea</i>
Navajo Bridge Cactus	<i>Opuntia nicholii</i>
Brady Plains Cactus	<i>Pediocactus bradyi</i>
Fickeisen Navajo Cactus	<i>Pediocactus peeblesianus fickeiseniae</i>
Gypsum Cactus	<i>Pediocactus sileri</i>
Devils Claw	<i>Schlerocactus spinosior</i>
James Whitlow Wort	<i>Paronychia jamesii</i>
Utah Sandpaper Bush	<i>Mortonia scabrella utahensis</i>
Silver Buffalo Berry	<i>Shepherdia argentea</i>

APPENDIX 15 (CONTINUED) **STATE SPECIAL STATUS ANIMALS AND PLANTS** **THAT OCCUR OR COULD OCCUR IN RMP AREA**

Plants (cont.)

Beaked Milkvetch	<i>Astragalus acutirostris</i>
Barneby Milkvetch	<i>Astragalus barnebyi</i>
Beath Milkvetch	<i>Astragalus beathii</i>
Beaver Dam Milkvetch	<i>Astragalus geyeri triquetrius</i>
Striped Flower Milkvetch	<i>Astragalus striatiflorus</i>
Mohave Dalea	<i>Psoralea arborescens pubescens</i>
King Clover	<i>Trifolium kingii macilentum</i>
Littlefield Nama	<i>Nama pusillum</i>
Three Hearts	<i>Tricardia watsoni</i>
Hopi Sage	<i>Salvia pachphylla</i>
Blue Curls	<i>Trichostema micranthum</i>
Nevada Moonpod	<i>Selinocarpus nevadensis</i>
Slender Evening Primrose	<i>Camissonia exilis</i>
Least Evening Primrose	<i>Camissonia parvula</i>
Roaring Spr. Prickle Poppy	<i>Argemone arizonica</i>
Heerman Wild Buckwheat	<i>Eriogonum heermanii subracemosum</i>
Atwood Wild Buckwheat	<i>Eriogonum thompsonae atwoodii</i>
Scarlet Wild Buckwheat	<i>Eriogonum zionis coccineum</i>
Shrub Gilia	<i>Ipomopsis frutescens</i>
Juniper Buttercup	<i>Ranunculus juniperinus</i>
Desert Rose	<i>Rosa stellata</i>
Two-leaf Bedstraw	<i>Galium bifolium</i>
Red Alum Root	<i>Heuchera rubescens</i>
King Snapdragon	<i>Antirrhinum hingii</i>
Mt. Trumbull Beardtongue	<i>Penstemon distans</i>
Nevada Blue Grass	<i>Poa nevadensis</i>
Virgin Narrows Spike Moss	<i>Salaginella leucobryoides</i>
Apline watsonii	<i>Salaginella watsonii</i>

APPENDIX 16

FEDERALLY LISTED AND CANDIDATE CATEGORY 1 AND 2 PLANT AND ANIMAL SPECIES CONSIDERED FOR ANALYSIS

Listed Species

Siler pincushion cactus	<i>Pediocactus sileri</i>
Brady pincushion cactus	<i>Pediocactus bradyi</i>
Woundfin minnow	<i>Plagopterus argentissimus</i>
Peregrine falcon	<i>Falco peregrinus anatum</i>
Southern bald eagle	<i>Haliaeetus l. leucocephalus</i>

Proposed Species

Virgin River chub	<i>Gila robusta seminuda</i>
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Candidate Category 1

Fickeisen's plains cactus	<i>Pediocactus peeblesianus</i> var. <i>fickeiseniae</i>
Bristly plains cactus	<i>Pediocactus paradinei</i>

Candidate Category 2

Desert tortoise	<i>Xerobates agassizii</i>
Ferruginous hawk	<i>Buteo regalis</i>
Western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>
Virgin River spinedace	<i>Lepidomeda mollispinus mollispinus</i>
Locoweed	<i>Astragalus ampullarius</i> 6
Beaver Dam milkvetch	<i>Astragalus geyeri</i> var. <i>triquetrus</i>
Locoweed	<i>Astragalus holmgrenorum</i>
Slender evening primrose	<i>Camissonia exilis</i>
Virgin River thistle	<i>Cirsium virginensis</i>
Mt. Trumbull beardtongue	<i>Penstemon distans</i>
Bicolor penstemon	<i>Penstemon bicolor</i> spp. <i>roseus</i>
Virgin springsnail	<i>Pyrgulopsis deserta</i>
Grand Wash springsnail	<i>Pyrgulopsis bacchus</i>
Desert rose	<i>Rosa stellata</i> (var. undefined as yet)
Southwestern Willow Flycatcher	<i>Empidonax traillii extimus</i>
Spotted owl	<i>Strix occidentalis</i>
Spotted bat	<i>Euderma maculatum</i>
Marble Canyon kangaroo rat	<i>Dipodomys microps leucotis</i>
White-faced ibis	<i>Plegadis chihi</i>
Western snowy plover	<i>Charadrius alexandrinus nivosus</i>
Mountain plover	<i>Charadrius montanus</i>
Long-billed curlew	<i>Numeicus americanus</i>

APPENDIX 17

HMP OBJECTIVES - VERMILLION RESOURCE AREA

SPECIES	CLAYHOLE HMP	PARIA-KANAB CREEK HMP	MT. TRUMBULL HMP
Pronghorn Antelope	Reestablish antelope on 661,000 acres of historic range: 400 in Grand Wash Planning Unit and 400 in Antelope Planning Unit. Increase fawn survival from 43 to 55 per 100 does.	Establish 100 antelope in House Rock Valley by 1990. Increase fawn survival from 5 to 25 per 100 does.	
Mule Deer	Improve habitat to support 500 mule deer.	Increase deer from 3 per section (180 deer) to 10 per section (600 deer) in the Buckskins by 1990. Increase deer from 1 per section (60 deer) to 3 per section (180 deer) on the Vermillion Cliffs rim by 1990. Increase deer from 1 per section (60 deer) to 3 per section (180 deer) on the Vermillion Cliffs rim by 1990. Determine need for habitat improvements on west rim and lower Kanab Creek Canyon by 1996.	Increase population from 2,000 to 4,000 yearlong by 1996. Increase fawn survival from 30 to 100 does by 1996. 10/section (600 deer) yearlong by 1996.
Bighorn Sheep		Reestablish 175 bighorn sheep in Paria Canyon - Vermillion Bench by 1995. Reestablish 130 sheep in Hacks Canyon-Kanab Creek by 2000.	
Turkey			Maximize turkey populations by protection and improvement of habitat.
Kaibab Squirrel			Establish a viable population in all suitable habitat in the ponderosa pine zone.
Chukar		Improve habitat and hunting opportunities by 1996.	Establish a population in Whitmore and Parashant Canyons through transplants.
Fish		Ensure a native fish N/A fauna is maintained in the Paria River drainage.	
Non-Game	Develop potential habitat for waterfowl and small game.	Provide for habitat needs of non-game species.	Ensure a diversity and abundance of habitats for non-game species.

APPENDIX 18

HMP OBJECTIVES - SHIVWITS RESOURCE AREA

SPECIES	BLACK ROCK HMP	PARASHANT HMP	VIRGIN RIVER - PAKOON BASIN HMP	TASSI - GOLDBUTTE BUTTE HMAP
Mule Deer	Increase populations from 800 to 2,200. Increase fawn survival rates from 30 to 75 per 100 does by 1996. Manage areas above 6,000 feet as crucial wildlife habitat.	Attain 2,200 deer by 1995. Attain fawn survival of 50 per 100 does by 1995.		
Bighorn Sheep	Introduce desert bighorn sheep into the Virgin Mountains and provide suitable habitat management for 100 bighorn.	Reintroduce into Grand Wash Cliffs by 1985. Meet habitat needs for 100 bighorns.		
Turkey		Establish turkey population by 1990; manage ponderosa pine to support turkeys.		
Woundfin Minnow			Assure survival.	
Fish			Maintain native populations.	
Desert Tortoise			Assure proper management of tortoise habitat; inventory and monitoring.	
Raptors		Inventory and management according to Bureauwide Raptor HMP.	Monitor and maintain habitat for nesting and wintering raptors.	
Riparian		Maintain and upgrade all riparian areas.	Inventory, monitor, and protect aquatic areas for special status and riparian dependent species.	
Wild Burro				Restore vegetation within critical areas to maintain ecological balance. Maintain a viable breeding population (90 -100 burros). Maintain free-roaming behavior of burros. Reduce impact of overbrowsing and trailing. Monitor habitat interactions with livestock, bighorn sheep and desert tortoise.

APPENDIX 19

DESERT TORTOISE HABITAT CATEGORIZATION

ARIZONA STRIP DISTRICT

Direction from the BLM Desert Tortoise Range Wide Plan (RWP), pages 11- 12, states that:

"Desert Tortoise Habitat Areas will be delineated by BLM district managers (with appropriate public review) to meet the three category goals Such categorization of habitats will assist the BLM in attaining the overall tortoise habitat management goal established by the Director. That goal is translated into more specific goals for each habitat category. These category goals will, in turn, be reached by implementing the objectives and related management actions.

"The purpose of the categorization of habitats is to provide for future protection and management of these areas and their associated desert tortoise populations. Differing levels of management, consistent with category goals, will be applied to habitat areas in each category.

"The bureau is committed to maintaining viable tortoise populations in Category 1 and 2 habitats through implementation of the management actions in the next section. The placing of an area of habitat in Category 3 means that these areas are of lower value in sustaining viable populations of tortoise on public lands, and thus can be subjected to lower management intensity specifically for tortoises than habitats in the other categories.

"Note that tortoise density and population trends will often be more useful in evaluating progress within Categories than for actual categorization of habitat areas. Usually, the overriding criteria for categorization will be viable population considerations and conflict resolvability. The concept of resolvability includes mitigation; thus, conflicts will be judged resolvable whenever the actions required to resolve them are within BLM's discretion.

" Where schedules permit, areas will be categorized through Resource Management Planning (RMP). Where schedules do not permit, categorizations will be completed using existing data and will be reconsidered whenever a RMP is prepared or revised. The results will be documented as a part of the approved plan."

The RWP instructs each state to prepare an implementation strategy that will provide guidance to the district level. The Draft Arizona Implementation Strategy, pages 3-4, states that:

"The purpose of categorization is to set priorities for the protection and management of tortoise habitats. Habitats will be categorized shortly after they are inventoried. Thus, categorization will occur over the next five years, as inventory is accomplished, but the entire process will be completed almost simultaneously with completion of inventory.

"Habitat areas must be delineated prior to categorization. Each disjunct tortoise population in the Sonoran Desert of Arizona will be considered a separate population occupying its own habitat area. On the Arizona Strip, where tortoise populations are 'patchily continuous,' habitats will be delineated based on localized population density.

"Delineated habitats will be placed into one of three categories, as described in the bureauwide management plan. Habitat manageability (resolvability of existing issues) and population density will be the principle factors considered in the initial categorization of tortoise habitats. Where such information is available, the other factors described in the bureauwide plan (population trend, habitat condition and trend, and population importance), will also be used in the categorization process. Within Arizona, the following density ranges will guide differentiation between categories:

Category I	51 + tortoises per square mile;
Category II	21 to 50 tortoises per square mile;
Category III	1 to 20 tortoises per square mile;

APPENDIX 19 (CONTINUED)

DESERT TORTOISE HABITAT CATEGORIZATION

ARIZONA STRIP DISTRICT

"Much of Arizona's initial habitat categorizations is based upon data collected from transects and only a few square-mile plots. Only crude estimates of population density, and little information on population trend and habitat condition or trend, can be extrapolated from such data. Dependence upon population density as a major factor in categorizing habitats will lessen as additional data are acquired on habitat quality, population trends, and other factors. At this time, such information can only be acquired through monitoring. Categories of some habitats (and perhaps the numerical descriptions of the categories themselves) will change as better insight into tortoise ecology is acquired. Habitats will be recategorized as new data are acquired (through monitoring or other sources) that indicate they should be recategorized. The recategorization process is not intended to be a corrective mechanism to account for declines in habitat quality; the purpose of this Strategy and the management methods described in it is to prevent significant declines in habitat quality."

DECISION-MAKING PROCESS

The first step in the evaluation and delineation of tortoise habitat on the Arizona Strip was to examine the information available on tortoise population densities, demographics, and trends. The importance of habitat to the maintenance of a viable population was then considered. Finally, the manageability of conflicts was analyzed.

Habitat delineation was based primarily on information gathered on the two desert tortoise study plots on the Arizona Beaver Dam Slope (Hohman and Ohmart, 1980; Duck and Snider, 1988) and from approximately 600 miles of 10 yard wide tortoise survey transects, the vast majority of which were performed by Sheppard from 1980 through 1982 (Wilhelm, 1975; Sheppard, BLM files; Burge, 1979; Duck, pers. comm.). Additional information from study plots and transects in Utah and Nevada (Coffeen, pers. comm; Coombs, 1974, 1977; Minden, 1980; Minden and Metzger, 1984; Welker, 1986; Duncan, 1987, Woodbury and Hardy, 1948), and Arizona Strip wildlife observation reports was incorporated.

Tortoise densities of 20 to 60 per sq. mile have been reported on the Beaver Dam Slope in Arizona. Densities on the Utah slope have been declining steadily. Minden estimated between 16 and 60 per sq. mile in 1980, while Welker reported 24 to 44 per sq. mile in 1986. The Beaver Dam Slope is the only area for which we have good density information. Population densities vary considerably on the Slope and these density values can be considered reliable only for the study sites themselves; care must be taken in using the data to estimate densities elsewhere.

Elsewhere on the Arizona Strip, we have relied on survey transects as estimators of relative density. By comparing transects which examined the two study plots with other transects we develop a relative density indicator. Habitat delineations were drawn around clusters of transects sharing similar totals. The lines were located along features on 1:24000 scale maps, using information on soils and vegetation. Admittedly, this is a best guess effort at this time. Future transects will be accomplished to refine some lines. There exists on the Arizona Strip areas of potential habitat for which we have no data. These areas will also be inventoried and delineated.

Several assumptions were made in order to determine the importance of an area for the maintenance of a viable population. We must assume that prior to the arrival of European settlers the tortoise population in the area was viable. This population is genetically and morphologically distinct (Buth, 1986; Lamb, 1987). The Virgin River was a partial barrier to movement, but the entire area from the Pagoon to the Beaver Dam Slopes to the Mormon Mountains (and beyond) was one large, patchily continuous population. Habitat fragmentation as a result of human development of the area (inundation of Lake Mead, construction of I-15, development of Mesquite and Littlefield/Beaver Dam) has effectively split the population into three areas - Pagoon/Gold Butte, Virgin Slopes, and the Beaver Dam/Mormon Mountains.

The U.S. Fish and Wildlife Service (USFWS) has listed the desert tortoise in Utah as Threatened and delineated 35 sq. miles of Critical Habitat (Dodd, 1980). However, despite apparent decreasing densities, we have assumed that the Beaver Dam Slopes in Utah and Arizona, along with the neighboring portion of Nevada (Mormon Mtns), is large enough to support a viable population, given proper attention to the protection of that habitat. Utah BLM has proposed to designate the Critical Habitat Area as Category 1.

APPENDIX 19 (CONTINUED)

DESERT TORTOISE HABITAT CATEGORIZATION

ARIZONA STRIP DISTRICT

Desert tortoise habitat in the Pakoos is an extension of the Nevada Gold Butte population. Along the border, transects indicate moderate to high relative densities. This population is important for maintaining the viability of the Gold Butte Crucial Habitat population (as defined by Berry, 1984). Some exchange may occur between these tortoise and those along the Virgin Slopes.

The Virgin Slopes contain moderate to low relative desert tortoise densities. Due to habitat fragmentation from the increase in roads and houses the main avenue for genetic exchange is being lost. The Virgin Mountains form a barrier to the south and east, while the Virgin River and Interstate-15 create a substantial barrier to the north. The growth of Mesquite and Bunkerville, Nevada, cause this population to become increasingly isolated. Habitat losses on private lands have increased with the increasing human population.

The impacts on tortoise habitat from increased urbanization and the concomitant human uses (agriculture, road-building, utility corridors, dumps, off-road vehicles, feral dogs, vandalism, tortoise collecting, vegetation collecting) are the least manageable of all conflicts. Livestock uses and mineral exploration and development can create conflicts with tortoise that must be identified and prevented. Livestock use occurs throughout tortoise habitat and mineral activity is allowed throughout tortoise habitat, and thus also was not a factor. This is not to say that these activities are not factors in tortoise ecology, rather that they were not used as factors to delineate habitat.

The evaluation of relative population density based on study plot and transect information indicated there are four density categories; high, medium, low, and unknown. Those areas identified as high, medium, or low were evaluated as to their importance to maintaining a viable population. The final step was an analysis of conflict resolvability.

The draft categorization of tortoise habitat on the Arizona Strip is shown on Map II-16. Categories 1, 2, and 3 follow the formula found in the Rangewide Plan and the Arizona Implementation Strategy.

These are preliminary categories that will be subject to redefinition as future surveys and monitoring improve our understanding of tortoise populations. An evaluation of tortoise habitat condition and trend was not included here. This evaluation should become one of the highest priorities of tortoise management and the results incorporated as they become available. The Bureau will not downgrade areas based on changes which are a result of permitted activities. Changes will be made only as a result of improved information and not as a means of avoiding conflicts. Information gained from future work such as transects, study plots, and habitat evaluations will continue to provide more information for better habitat management.

CATEGORY I AREAS

Area 1: Beaver Dam Slope. This area includes habitat north of the Virgin River between the Paiute-Beaver Dam Wilderness Area and Beaver Dam Wash. Hohman and Ohmart (1978) determined that population densities ranged from 25 to 50 per sq. mile. Duck and Snider (1987) found similar densities. This area is important to maintaining a viable population along the entire Beaver Dam Slopes, including the Critical Habitat Area. When combined with the proposed Utah Category 1 area along the Beaver Dam Slopes a continuous area of 46,600 acres will be designated in Utah and Arizona. This area contains 2 tortoise study plots in Arizona.

This area is bounded on the east by the 3800 ft contour line in the Beaver Dam Mtns. The Paiute-Beaver Dam Wilderness Area provides a high level of protection to tortoise habitat within the wilderness and buffers the east edge of this Category 1 area. The southern boundary of the Category 1 area is the conflict resolvability line drawn around the Virgin River. Private and county lands along the river have been excluded from Category 1 designation. The west edge is formed by the manageability line drawn around the agricultural and urban development in Beaver Dam Wash. The north boundary is the Arizona-Utah border.

APPENDIX 19 (CONTINUED)

DESERT TORTOISE HABITAT CATEGORIZATION

ARIZONA STRIP DISTRICT

Area 2: Mosby Nay. Sheppard and Duck transects indicate that the highest densities in the Pakoon Basin are found along the Arizona/Nevada border south of Whitney Ridge. This area is important to maintaining a viable population in the adjacent Gold Butte (Nevada) Crucial Area which has been mentioned as a candidate for Category 1 designation.

The west boundary of the area is the Arizona-Nevada border, the southern boundary is the Lake Mead Natural Recreation Area, the east boundary is a large north-south ridge (actually it's an upthrust block) called the Cockscomb, while the north boundary location runs between concentrations of high and low transect values.

CATEGORY II AREAS

Area 3: Beaver Dam West. Estimates of tortoise densities are based on transects conducted by Sheppard and Duck and range from zero to near fifty per square mile. The area has few conflicts and is important to the viability of the Mormon Mountains and Beaver Dam Slopes tortoise populations. The area is adjacent to proposed Category 2 habitat in Utah and Nevada.

The west boundary is the Arizona-Nevada border, the north boundary is the Arizona-Utah border, the east boundary is Beaver Dam Wash, and the south boundary is a conflict manageability line 1/2 mile north of state land and along I-15.

Area 4: Lower Virgin Slopes. Although transects are notoriously poor methods of determining trend, there are significant decreases in the values of transects run by Sheppard in 1980-1982 and Duck in 1986-1988. This population has been effectively separated from other populations in the area by the Virgin River and I-15. The small size may prove to be inadequate to support a viable population, yet there are tortoises in sufficient numbers now to warrant protection. Some gene exchange may occur between tortoises here and those on the Beaver Dam Slopes and in the Gold Butte Crucial Area, although it has been reduced.

Area 5: Tank Wash. Fires in the Pakoon Basin have drastically altered the vegetative composition from a creosote shrub - joshua tree community to an (exotic) annual grassland within the last ten years. This area remains as the best refuge in the Pakoon Basin east of the Mosby Nay Category 1 Area. This is a prime candidate for redelineation to include the remaining unburned tortoise habitat.

CATEGORY III AREAS

Area 6: Beaver Dam. Tortoise densities have declined to near zero due to increasing urban and agricultural development near Beaver Dam, Arizona, and along Beaver Dam Wash. Much of this area is owned privately, and the conflicts are difficult to resolve.

Area 7: Littlefield. Situation very similar to Areas 6 and 8.

Area 8: Windy Acres. A large increase in the development of private lands in this area was followed by substantial decreases in densities. Urban development is associated with OHV activity, collecting, vandalism, and other forms of habitat deterioration. Tortoise here have been isolated from the Beaver Dam population by the Virgin River and I-15.

Area 9: Upper Virgin Slopes. Poor denning due to soils and high water flows have kept densities low (5-10/sq. mile). Some of the area is within the Paiute Wilderness Area which affords a high level of protection.

Area 10: Pakoon. A large area of low - moderate densities. Fires have substantially reduced the value of the habitat and reduced tortoise population densities. There are very few conflicts in this area because of the remoteness. Livestock grazing and recreation are the only activities in the area (other than fires).

APPENDIX 19 (CONTINUED) **DESERT TORTOISE HABITAT CATEGORIZATION** **ARIZONA STRIP DISTRICT**

POTENTIAL HABITAT

Area 11: Virgin River Gorge. The steep slopes and difficult access into the area have reduced the amount of activity spent surveying tortoise populations. There appears to be proper soils and vegetation for tortoises, therefore until surveys are completed the area will be treated as an unknown.

Area 12: Big Valley. Although some transects have been performed in this area, much more information is needed to accurately assess tortoise population and habitat.

DRAFT DESERT TORTOISE HABITAT CATEGORY AREAS ON THE ARIZONA STRIP DISTRICT

Area No.	Area Acres*	Population Density	Trend	Conflict Resolvability	Importance To Viable Population	Category Assigned
1	19,800	20 - 50	St/De	High	High	1
2	17,500	20 - 50	St/D	High	High	1
3	27,000	0 - 50	?	High	High	2
4	23,650	20 - 50	?	High	Low	2
5	5,700	20 - 50	?	High	Mod	2
6	7,500	0 - 20	De	Low	Low	3
7	21,000	0 - 20	De	Low	Low	3
8	11,250	0 - 20	De	Low	Low	3
9	20,800	0 - 20	?	High	Low	3
10	172,000	0 - 50	De	High	Mod	3
11	26,750	?	?	High	?	PH
12	36,000	?	?	Low	?	PH

St = Stable

De = Decreasing

PH = Potential Habitat

* = desert tortoises per square mile

? = Unknown

Total Area Category 1 = 37,300 acres

Total Area Category 2 = 56,350 acres

Total Area Category 1 and 2 = 93,650 acres

Total Area Category 3 and PH = 295,300 acres

Total Area Category 1, 2, 3, and PH = 388,950 acres

All acreages derived from BLM GIS system.

APPENDIX 20

ROS SETTING DESCRIPTIONS

ROS CLASSES	PHYSICAL SETTING	SOCIAL SETTING	MANAGERIAL SETTING
Primitive (P):	Area is characterized by essentially unmodified natural environment of fairly large size.	Concentration of users is very low and evidence of other users is minimal.	The area is managed to be essentially free from evidence of man-induced restrictions and controls. Only facilities essential for resource protection are used. No facilities for comfort or convenience of the user are provided. Spacing of groups is informal and dispersed to minimize contacts between groups. Motorized use within the area is not permitted.
Semi-Primitive Nonmotorized (SPNM):	Area is characterized by a predominantly unmodified natural environment of moderate to large size.	Concentration of users is low, but there is often evidence of other area users.	On-site controls and restrictions may be present but are subtle. Facilities are provided for the protection of resource values and the safety of users only. Spacing of groups may be formalized to disperse use and limit contacts between groups. Motorized use is not permitted.
Semi-Primitive Motorized (SPM):	Same as Semi-Primitive Nonmotorized	Same as Semi-Primitive Nonmotorized	Same as Semi-Primitive Nonmotorized; except that motorized use is permitted.
Roaded Natural (RN):	Area is characterized by a generally natural environment. Resource modification and utilization practices are evident.	Concentration of users is low to moderate with facilities sometimes provided for group activity. Moderate evidence of the sights and sounds of man.	On-site controls and restrictions offer a sense of security. Rustic facilities are provided for user convenience as well as for safety and resource protection. Conventional motorized use is provided for in construction standards and design of facilities.
Rural (R):	Area is characterized by a substantially modified natural environment. Resource modification and utilization practices are evident.	Concentration of users is often moderate to high. The sights and sounds of man are readily evident.	Many facilities are designed for use by large numbers of people. Facilities are often provided for specific activities. Developed sites, roads, and trails, are designed for moderate to high use. Moderate densities are provided far away from developed sites. Facilities for intensive motorized use are available.
Urban (U):	Area is characterized by a highly modified environment, although the background may have natural elements. Vegetation is often exotic and manicured. Soil may be protected by surfacing.	Large numbers of users can be expected. The sights and sounds of man, on-site, predominate.	Modern facilities are provided for the use and convenience of large groups. Controls and restrictions are obvious and numerous. Facilities for high intensity motor use and parking are present with forms of mass transit often available.

APPENDIX 21

WILD & SCENIC RIVERS

ELIGIBILITY, CLASSIFICATION, AND SUITABILITY

STUDY PROCESS

The wild and scenic river study process has three steps:

1. Determine if the river segment(s) is eligible for wild and scenic river designation.
2. Determine the potential classification of the river segment(s) as wild, scenic, recreational, or any combination thereof.
3. Conduct a suitability study/legislative EIS to determine if the river segment(s) is suitable for designation to the Wild and Scenic Rivers System.

Specific study procedures are found in BLM Manual 8351 and in the final revised U.S. Departments of Agriculture and Interior guidelines found in Federal Register Vol. 7, No. 173, September 7, 1982. The guidance recommends that all three steps be completed during the RMP process. However, if circumstances make this impossible, the study/EIS step may be deferred for up to five years. Minimum determinations in an RMP involving a potential wild and scenic river must include decisions on eligibility and classification.

Because of the RMP schedule, funding limitations and coordination requirements involving three BLM districts in three states (Utah, Arizona and Nevada), the Arizona Strip District has elected to defer the suitability study for the Virgin River. This appendix completes the first two steps of the process for the Virgin River and all three steps for the Paria River as required by BLM guidance.

The suitability study/legislative EIS for the Virgin River will be a joint effort involving the BLM Cedar City District, Utah, the BLM Las Vegas District, Nevada and the Arizona Strip District.

STUDY CRITERIA

To be eligible for inclusion in the national system, a river segment must be free-flowing, and the river and its adjacent land area must possess at least one outstandingly remarkable value. There are no specific requirements regarding the length or flow of an eligible river segment. Length and flow are sufficient if they sustain or complement the outstandingly remarkable values for which the river would be designated. The minimum study corridor includes the river and the adjacent lands to 0.25 miles from the river's edges. A wider corridor may be studied if inclusion could facilitate resource management in the river area. If a river segment is determined to be noneligible during the planning process, further study should be discontinued. Planning records must document the basis for the noneligibility determination.

A river segment's potential classification depends on the condition of the river and adjacent lands as they exist at the time of the study. The Wild and Scenic Rivers Act specifies three classifications for eligible rivers: wild, scenic and recreational.

To be classified wild, a river segment must be free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted.

To be classified scenic, a river segment must be free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads. The area must not show substantial evidence of human activity.

To be classified recreational, a river segment may be readily accessible by road or railroad, may have some development along the shoreline and may have undergone some impoundment or diversion in the past.

APPENDIX 21 (CONTINUED)

WILD & SCENIC RIVERS

ELIGIBILITY, CLASSIFICATION, AND SUITABILITY

INTERIM MANAGEMENT

BLM guidance provides for interim protection of a river segment after it is determined eligible and subsequently classified as wild, scenic, and/or recreational. Management activities will not be allowed to damage the existing eligibility, classification, or suitability. Outstandingly remarkable values of the river area must be protected, and to the extent practicable, enhanced. The free-flowing characteristics of the river segment cannot be modified.

VIRGIN RIVER OVERVIEW

The following sections address the eligibility and classification steps of a study on the Virgin River in Arizona for potential Wild and Scenic River designation. The river was on the 1982 National Rivers Inventory but was later removed from that list. However, public interest expressed during the RMP process indicated that the river should be studied for potential designation.

INTRODUCTION

The Virgin River flows through three states, originating north and east of Zion National Park and flowing through southwestern Utah, the Virgin River Gorge in Arizona, and finally into Lake Mead in Nevada. The total river segment covers 76 miles, from just above Hurricane, Utah to Lake Mead. This eligibility and classification determination covers only the 35-mile section in Arizona. This section has been determined eligible for potential inclusion into the Wild and Scenic Rivers System. The Arizona section was split into four potential classifications: segment 1 - wild; segment 2 - scenic; segment 3 - recreational; segment 4 - recreational.

Although the river was removed from the National Rivers Inventory (NRI), the values for which it was originally included are considered in this eligibility and classification process. The Virgin was identified as having outstandingly remarkable scenic, geologic, fisheries and wildlife values.

ADMINISTRATION

The Arizona section of the Virgin has been determined non-navigable. Therefore, the river bed, use on the river, and the area within the corridor included in this study are controlled by the landowner. Of the approximately 35 miles of river in Arizona, 28.5 miles are under BLM administration, 6 miles are privately owned and 0.5 miles are state owned.

RIVER DESCRIPTION

The river cuts through an area of extreme geologic faulting and folding, exposing numerous layers of the earth's crust and providing spectacular scenery. The river also is habitat for the roundfin minnow, an endangered species, and the Virgin River chub, a candidate for endangered status. Additionally, the Virgin provides a unique riparian corridor through the otherwise arid region and is, therefore, an important water source for a variety of wildlife, including the desert bighorn sheep, recently reintroduced into the area.

The river corridor to be studied consists of the river itself and a strip of land 0.25 miles from the high water mark on each side of the river. This corridor starts where the river crosses the Utah-Arizona state line and ends where it crosses the Arizona-Nevada state line. The 35-mile section has been divided into four segments:

- (1) Utah-Arizona state line (Mile 0) to the first I-15 bridge (approximately 3 river miles).
- (2) First I-15 bridge to the Virgin River Campground (approximately 9 river miles).
- (3) Virgin River Campground to the mouth of the Virgin River Gorge (approximately 7 river miles).
- (4) Mouth of the gorge to the Arizona-Nevada state line (approximately 15 river miles).

Segment 1

This stretch of the Virgin is entirely within the Beaver Dam Mountains Wilderness. The wilderness extends north into Utah 2.1 miles along the Virgin River Gorge.

APPENDIX 21 (CONTINUED)

WILD & SCENIC RIVERS

ELIGIBILITY, CLASSIFICATION, AND SUITABILITY

The segment runs through a rugged canyon with walls from 300 to 500 feet high. Access is possible only by foot or horseback from the bridge on I-15 or by floating the river down from Utah. There is no shoreline development and human evidence is limited to three fencelines that come down to the water's edge and one small corral that is no longer in use. Scenic and geologic features are outstanding. The shoreline is primarily narrow strips of sandy beaches. Riparian vegetation, consisting of tamarisk, willow and cottonwood, is somewhat sparse due to periodic flooding from spring runoff and summer thunderstorms.

Segment 2

This segment flows through high quality scenery although the scenic quality is lowered somewhat by proximity to I-15 at four different points where talus slopes from highway construction form the river bank. Legal recreation access along this segment is limited to the Virgin River Campground.

Segment 3

This segment includes the river corridor from the Virgin River Campground to the mouth of the gorge and lies mostly within the I-15 highway right-of-way. While it does provide some of the best river running challenges and is in the narrowest, most precipitous part of the gorge, it nevertheless has been impacted greatly by the highway. The river flows under four bridges and it is along this stretch that most of the twelve river diversions occurred during construction.

Segment 4

The fourth segment flows through a gently rolling, somewhat incised alluvial fan, with sandy shorelines and more riparian vegetation than the canyon segments. There are several access points scattered along the shoreline, human development (houses and agricultural fields) is visible, and a small diversion dam near the Arizona-Nevada state line feeds water to fields.

ELIGIBILITY

The river meets the definition of a free-flowing stream from the Utah-Arizona state line to the Arizona-Nevada state line. Segments 1 and 2 have outstandingly remarkable scenic, geologic, aquatic and riparian values. Segments 3 and 4 have outstandingly remarkable aquatic and riparian values. Therefore, all four segments are determined eligible for inclusion in the Wild and Scenic Rivers System.

POTENTIAL CLASSIFICATION

Segment 1 meets the wild criteria, being free of impoundments, generally inaccessible except by trail, with shorelines essentially primitive and waters unpolluted. Segment 2 meets the scenic criteria. It is also free of impoundments and generally inaccessible except by trail. However, shoreline disturbance from highway construction is apparent at several points. Segment 3 meets the recreational but not the scenic criteria due to the bridges and river channel modifications. Segment 4 meets the recreational criteria, with several access points and noticeable human developments.

INTERIM MANAGEMENT

Interim management for the Virgin River will require that the potential classifications as determined in this document be considered when an action is proposed that may affect these classifications. Especially important is segment 4 from the mouth of the Virgin River Canyon to the Arizona-Nevada state line because of the human population growth and related demands on natural resources. Upstream from the canyon mouth, the river is protected by wilderness designation and a scenic withdrawal.

APPENDIX 21 (CONTINUED)

WILD & SCENIC RIVERS

ELIGIBILITY, CLASSIFICATION, AND SUITABILITY

PARIA RIVER OVERVIEW

The following sections address the eligibility, classification, and suitability steps of a study on the Paria River in Arizona for potential Wild and Scenic River designation. The examined river segment runs some 28 miles from the Arizona-Utah state line to the boundary of Glen Canyon National Recreation Area near Lees Ferry. The river was on the 1982 National Rivers Inventory.

INTRODUCTION

The Paria River flows through two states, originating in Bryce Canyon National Park and flowing through southcentral Utah, the Paria River Canyon in Utah and Arizona, and finally into the Colorado River at Lees Ferry, Arizona. The total river segment covers 92 miles, from its source at Bryce Canyon, Utah to its mouth at Lees Ferry. This eligibility, classification, and suitability determination covers only the 28-mile section in Arizona within the wilderness. This section has been determined eligible and suitable for a Wild and Scenic River designation with a potential classification of wild and scenic.

The Paria was identified as having outstandingly remarkable scenic, recreational, geologic, fisheries and cultural values.

ADMINISTRATION

The Arizona section of the Paria has been determined non-navigable. Therefore, the river bed, use on the river, and the area within the corridor included in this study are controlled by the landowner. Of the approximately 31 miles of river in Arizona, 28 miles are under BLM administration, 3 miles are under NPS administration.

RIVER DESCRIPTION

The river cuts through an area of significant geologic uplift and with associated faulting, exposing numerous layers of the earth's crust and providing spectacular scenery. The river provides habitat for the speckled dace, bluehead mountain sucker, flannel mouth sucker and razorback sucker. Additionally, the Paria River provides a unique riparian corridor through the otherwise arid region and is, therefore, an important water source for a variety of wildlife, including deer and the desert bighorn sheep, recently reintroduced into the area.

The river corridor to be studied consists of the river itself and a strip of land 0.25 miles from the high water mark on each side of the river. This corridor starts where the river crosses the Utah-Arizona state line and ends where it enters the Glen Canyon National Recreation Area.

This segment of the Paria is entirely within the Paria Canyon-Vermilion Cliffs Wilderness. The wilderness extends north into Utah 4 miles along the Paria River and west some 9 miles along Buckskin Gulch--a tributary to the Paria.

The segment runs through a rugged and often narrow canyon with walls up to 600 feet high then gradually opens to 2½ miles wide and 2,600 feet deep. Access is possible only by foot or horseback from four trailheads outside the wilderness--three in Utah and one at Lees Ferry. Recreational use of the river typically includes hiking, backpacking and some horseback riding. River rafting or floating is generally not done due to low water and hazards.

There is no shoreline development and human evidence is limited to the remains of a ranch site, several deteriorating roads (constructed for uranium exploration in the 1950s), a small corral and an abandoned water pump. Most of these evidences are historic in nature. Scenic and geologic features are outstanding. The shoreline consists primarily of narrow strips of sandy, wooded terraces, although in the upper canyon the shorelines become sheer canyon walls. Riparian vegetation, such as tamarisk, willow, box elder and cottonwood, grows along the shorelines below the Narrows of the Paria.

APPENDIX 21 (CONTINUED)

WILD & SCENIC RIVERS

ELIGIBILITY, CLASSIFICATION, AND SUITABILITY

ELIGIBILITY

The river meets the definition of a free-flowing stream from the Utah-Arizona state line to Glen Canyon National Recreation Area. It has outstandingly remarkable scenic, geologic, recreational, cultural and riparian values. Therefore, this river segment is determined eligible for inclusion in the Wild and Scenic Rivers System.

POTENTIAL CLASSIFICATION

The subject segment meets the wild and scenic criteria, being free of impoundments, generally inaccessible except by trail, with shorelines essentially primitive and waters unpolluted.

SUITABILITY

The studied segment is determined to be suitable for potential designation as a Wild and Scenic River. The outstandingly remarkable scenic, recreational, geologic, fisheries, and cultural values along the river corridor make the Paria River a deserving potential addition to the Wild and Scenic Rivers System. The entire study segment is public lands administered by the Bureau of Land Management and managed and protected as wilderness. No private or state lands encumber this situation. Other compatible programs, such as wildlife and range management, occur in the study area. Wildlife programs in particular contribute to the outstanding values of the area with the management of bighorn sheep and deer. Additionally, the Paria River Canyon provides habitat for the peregrine falcon. Much of the study segment includes somewhat diverse riparian habitat, which is rare in this part of Arizona.

Designation of the study segment would add to the existing protection provided by statutory wilderness by contributing to the maintenance or perhaps enhancement of opportunities for visitors to view and enjoy the outstanding values mentioned. Riparian systems and wildlife could also benefit by a greater assurance of water availability. Designation could increase the level of protection above that of wilderness in that off-wilderness issues potentially impacting the free-flowing nature of the river could justifiably be addressed. Non-designation would not greatly diminish protection of the Paria River except in the ability to address upstream, off-wilderness issues potentially impacting its free-flowing nature.

Little public interest, either support or opposition, has been expressed concerning the study of the Paria River for potential designation as a Wild and Scenic River. Existing wilderness designation and the relative obscurity of this issue are probable reasons for the lack of interest. The BLM Kanab Resource Area (upstream) and Glen Canyon National Recreation Area (downstream) have supported potential designation for the study segment.

It is anticipated that the administration of the study segment as a designated Wild and Scenic River would not involve a significant increase in costs. Management of the wilderness area and the parallel nature of protection provided by both types of designations would keep costs of administration to a minimum. Since there are no private or state lands involved, there is no need for land acquisition funds.

The Arizona Strip District of the BLM has managed the Paria Canyon-Vermilion Cliffs Wilderness for five years. Managing the Paria River as a Wild and Scenic River would go together well with managing for the protection, preservation and public use of wilderness values.

INTERIM MANAGEMENT

Interim management for the Paria River will require that the potential classifications as determined in this document be considered when an action is proposed that may affect these classifications. Especially important is the upper drainage in Utah between Bryce Canyon National Park and U.S. Highway 89 because of scattered agricultural lands and the potential their use poses for pollution. Downstream from the highway, the river is protected by wilderness designation.

APPENDIX 22

OFF-HIGHWAY VEHICLE DESIGNATIONS

DEFINITION:

1. "Off-highway vehicle"- any motorized vehicle capable of, or designed for, travel on or immediately over land or other natural terrain, excluding: (a) any military, fire, search and rescue, or law enforcement vehicle while being used for emergency purposes; (b) any vehicle whose use is expressly approved by the authorized officer; (c) vehicles in official use; and (d) any combat or combat support vehicle when used in times of national defense emergencies.
2. "Official use"- use by an employee, agent, or designated representative of the federal government or one of its contractors, in the course of carrying out required duties.
3. "Trail"- an unmaintained road, such as a 4WD trail, consisting of two parallel tracks.
4. "Open areas"- an area where motorized vehicle use is permitted both on and off road.
5. "Closed areas"- an area where motorized vehicle use is prohibited. Use of vehicles in closed areas may be approved by the authorized officer for special purposes or legal requirements. Wilderness areas are closed.
6. "Limited to existing roads and trails"- motorized vehicle use is permitted on all roads and trails in the area unless otherwise signed as closed. Motorized vehicle use is not permitted on roads and trails that have been physically closed through reclamation actions. Some off-road travel may be permitted (see below).
7. "Limited to designated roads and trails"- motorized vehicles are permitted only on roads or trails that have been identified as open on a district map. Roads and trails not identified as open are closed to all motorized use and will be signed as closed on the ground. Off-road travel is prohibited unless prior approval has been granted by the authorized officer (see below).
8. "Limited to seasonal use"- motorized vehicle use is regulated by the time of year that specific management prescription apply.
9. "Off-road"- any motorized vehicle use not on an existing road or trail. This refers to cross-country travel.

MANAGEMENT STRATEGIES/GUIDELINES:

- A. Limited to existing roads or trails- BLM will not prepare an activity plan/map for these areas. All authorized public land users that hold a permit or license (i.e. grazing permittees, wood permits, hunting license, rights-of-way holders, mining claim, etc.) may drive off-road if required to fulfill their permit or license. Motorized vehicles must park within 100 yards of an existing road or trail for camping.
- B. Limited to designated roads or trails- BLM will prepare an activity plan and a map for each area that will identify the specific roads that are open. These plans and maps will be circulated for public review as they are prepared. Specific requests and approval by the authorized officer is required prior to any off-road vehicle use in these areas, including valid permit and license holders. Off-road vehicle use for casual use mineral activities will be discouraged without prior filing of a notice of intent. Hunters may not use motorized vehicles off the designated roads to retrieve an animal. Vehicle parking must be within 50 feet of the designated roads.
- C. Once the RMP is finalized, all areas classified as "Limited to designated roads and trails" will be managed as "Limited to existing roads and trails" until a specific activity plan and map are prepared.
- D. All off-road vehicle use must be limited to the minimum necessary in order to accomplish the task and to prevent undue or unnecessary degradation to the area.
- E. Organized events, timber harvesting, and land treatment projects will be handled on a case-by-case basis.
- F. Emergency services and/or law enforcement activities are exceptions to these policies.

APPENDIX 23

VISUAL RESOURCE MANAGEMENT CLASSES

OVERVIEW

The purpose of this appendix is to describe the process by which visual resources are classified and the visual impacts of proposed projects are assessed. Public lands within the Arizona Strip District have been inventoried and placed into visual resource management (VRM) classes. This appendix also describes how the classes are assigned.

ESTABLISHING VISUAL RESOURCE MANAGEMENT CLASSES

The VRM classification process includes (1) outlining and numerical evaluation of scenic quality; (2) outlining of visual sensitivity levels; (3) delineating distance zones; and (4) assigning VRM classes.

SCENIC QUALITY

The first step is accomplished by outlining similar scenery on a topographic map. Numerical values are then given to the area's key factors (landform, color, water, vegetation, uniqueness, and intrusions). The total of these values determines whether the area is a class A, B, or C scenery unit.

Class A scenery combines the most outstanding characteristics of each rating factor. Class B scenery combines some outstanding features and some that are fairly common to the physiographic region. Class C scenery combines features that are fairly common to the physiographic region.

VISUAL SENSITIVITY LEVELS

Sensitivity levels indicate the relative degree of user interest in visual resources and concern for changes in the existing landscape character. This section is designed to bring input from area and district management to the weighing of the two sensitivity criteria: (1) vehicular and pedestrian use volume and (2) expressed user attitudes toward change. These criteria are evaluated from a matrix, and a final sensitivity rating of high, median, or low is given. The sensitivity rating will figure into the final VRM classification.

DISTANCE ZONES

Three distance zones are outlined on topographic maps: foreground/ middleground, background, and seldom seen. The foreground/middleground zone is a distance of from zero to 3 to 5 miles away, where activities can be viewed in detail. The background is the remaining area up to 15 miles distant, and seldom seen is that area beyond 15 miles or not seen at all from any corridor of travel.

VRM CLASSES

After classification as to scenic quality, visual sensitivity, and distance zones, areas are assigned to one of five management classes. These management classes, designed to maintain or enhance visual quality, describe the allowable degrees of change to the basic landscape elements. The visual resource management (VRM) classes are established through the RMP process and may differ from the actual inventory. For example, an area that was determined to be in class II during the inventory process could be designated as a class I in the RMP because of ACEC designation.

APPENDIX 23 (CONTINUED)

VISUAL RESOURCE MANAGEMENT CLASSES

ANALYZING VISUAL IMPACTS

For activities proposed on public lands, impacts are evaluated with the visual resource contrast rating system. This system is a method of evaluating the visual contrast of a proposed activity to the existing landscape Character.

The landscape is separated into its major features (land and water surface, vegetation, and structures), and the degree of change that would occur in contrast of form, line, color and texture of each feature is predicted. This assessment indicates the amount of contrast that would result from a proposed activity (the severity of impact) and serves as a guide in determining what would be required to reduce the contrast to the point where it will meet the VRM class's requirements for the area. Objectives for the VRM classes are listed below:

- I One element should not exceed a weak degree of contrast (1), and the total for any feature may not exceed 10.
- II The degree of contrast for any one element should not exceed a moderate value (2), and the total contrast rating for any feature may not exceed 10.
- III The degree of contrast for any one element should not exceed a moderate value (2), and the total contrast rating for any feature may not exceed 16.
- IV The total contrast rating for any feature should not exceed 20.
- V This is an interim classification for rehabilitation or enhancement.



APPENDIX 24

EASEMENT ACQUISITION NEEDS (APPROXIMATE LOCATIONS)

GILA AND SALT RIVER MERIDIAN

Description

1. T38N, R4E, Section 7, SE1/4 - 1/2 mile
2. T40N, R5E, Sections 28 & 33 - 2 miles
3. T35N, R8W, Section 15, S1/2 SE1/4; Section 14, S1/2 SW1/4 - 1 mile
4. T35N, R7W, Section 20, S1/2- 3/4 mile
5. T41N, R6W, Section 15 - 1 mile
6. T41N, R5W, Section 8, S1/2 S1/2 - 1/2 mile
7. T41N, R5W, Section 18, NE1/4 NE1/4; Section 17, NW1/4 NW1/4 - 1/2 mile
T41N, R5W, Section 18, S1/2 S1/2; Section 17, SW1/4 SW1/4; Section 20, NE1/4 NW1/4 - 1 mile
8. T40N, R15W, Section 4, NW1/4 NW1/4 - 1/4 mile
9. T40N, R15W, Section 4, SW1/4 SE1/4 - 1/4 mile
10. T40N, R15W, Section 9, E1/2 NW1/4, NE1/4 SW1/4 - 3/4 mile
11. T35N, R10W, Sections 26 & 27, S1/2 S1/2 - 3 miles
12. T34N, R10W, Section 35 - 1 mile
T33N, R10W, Section 1 - 1 mile
T33N, R9W, Section 7 - 1.5 miles
13. T33N, R12W, Section 21, SE1/4 SE1/4; Section 27; Section 35, N1/2 - 2.5 miles
14. T32N, R11W, Section 6, W1/2; Section 7, NE1/4 NW1/4 - 1.5 miles

APPENDIX 25

MINERAL POTENTIAL CLASSIFICATION SYSTEM*

I. LEVEL OF POTENTIAL

- O The geologic environment, the inferred geologic processes; and the lack of mineral occurrences do not indicate potential for accumulation of mineral resources.
- L The geologic environment and the inferred geologic processes indicate low potential for accumulation and preservation of mineral resources.
- M The geologic environment, the inferred geologic processes, and the reported occurrences or valid geochemical / geophysical anomaly indicate moderate potential for accumulation and preservation of mineral resources.
- H The geologic environment, the inferred geologic processes, the reported mineral occurrences and/or valid geochemical/geophysical anomaly, and the known mines or deposits indicate high potential for accumulation of mineral resources. The “known mines and deposits” do not have to be within the area that is being classified, but have to be within the same type of geologic environment.
- ND Mineral(s) potential not determined due to lack of relevant data. The notation does not require a level-of-certainty qualifier.

II. LEVEL OF CERTAINTY

- A The available data are insufficient and/or cannot be considered as direct or indirect evidence to support or refute the possible existence of mineral resources within the respective area.
- B The available data provide indirect evidence to support or refute the possible existence of mineral resources.
- C The available data provide direct evidence but are quantitatively minimal to support or refute the possible existence of mineral resources.
- D The available data provide abundant direct and indirect evidence to support or refute the possible existence of mineral resources.

For the determination of No Potential use O/D. This class shall be seldom used, and when used it should be for a specific commodity only. For example, if the available data show that the surface and subsurface type of rock in the respective area is batholithic (igneous intrusive), one can conclude, with reasonable certainty, that the area does not have potential for coal. *As used in this classification, “potential” refers to potential for the presence (occurrence) of a concentration of one or more energy and/or mineral resources. It does not refer to or imply potential for development and/or extraction of the mineral resource(s). It does not imply that the potential concentration is or may be economic.

APPENDIX 26

DETERMINATION OF EROSION CONDITION CLASS

SOIL SURFACE FACTORS (SSF)

	Soil					Slight					Moderate					Critical					Severe				
SOIL MOVEMENT	No visual evidence of movement					Some movement of soil particles					Moderate movement of soil is visible and recent. Slight terracing generally less than 1" in height					Occurs with each event. Soil and debris deposited against minor obstructions					Subsoil exposed over much of area, may have embryonic dunes and wind scoured depressions				
	0	1	2	3		4	5	6			6	7	8			9	10	11			12	13	14		
SURFACE LITTER	Accumulating in place					May show slight movement					Moderate movement is apparent, deposited against obstacles					Extreme movement apparent, large and numerous deposits against obstacles					Very little remaining (use car on low productive sites)				
	0	1	2	3		4	5	6			6	7	8			9	10	11			12	13	14		
SURFACE ROCK	If present, the distribution of fragments show no movement caused by wind or water					If present, coarse fragments have a truncated appearance or spotty distribution caused by wind or water					If present, fragments have a poorly developed distribution pattern caused by wind or water					If present, surface rock or fragments exhibit same movement and accumulation of smaller fragments behind obstacles					If present, surface rock or fragments are dissected by rills and gullies or are already washed away				
	0	1	2	3		3	4	5			6	7	8			9	10	11			12	13	14		
PEDESTALLING	No visual evidence of pedestalling					Slight pedestalling, in flow patterns					Small rock and plant pedestals occurring in flow patterns					Rocks and plants on pedestals generally evident, plant roots exposed					Most rocks and plants pedestalled and roots exposed				
	0	1	2	3		4	5	6			7	8	9			10	11	12			12	13	14		
FLOW PATTERNS	No visual evidence of flow patterns					Deposition of particles may be in evidence					Well defined, small, and few with intermittent deposits					Flow patterns contain silt and sand deposits and alluvial fans					Flow patterns are numerous and readily noticeable. May have large barren fan deposits				
	0	1	2	3		4	5	6			7	8	9			10	11	12			13	14	15		
RILLS	No visual evidence of rills					Some rills in evidence at infrequent intervals over 10'					Rills 1/2" to 6" deep occur in exposed places at approximately 10' intervals					Rills 1/2" to 6" deep occur in exposed area at intervals of 5 to 10'					May be present at 3" to 6" deep at intervals less than 5'				
	0	1	2	3		4	5	6			7	8	9			10	11	12			13	14	15		
GULLIES	May be present in stable condition. Vegetation on channel bed and side slopes					A few gullies in evidence which show little bed or slope erosion. Some vegetation is present on slopes					Gullies are well developed with active erosion along less than 10% of their length. Some vegetation may be present					Gullies are numerous and well developed with active erosion along 10 to 50% of their lengths or a few well developed gullies with active erosion along more than 50% of their length					Sharply incised gullies cover most of the area and over 50% are actively eroding				
	0	1	2	3		4	5	6			7	8	9			10	11	12			13	14	15		

EROSION CONDITION CLASSES: Stable 0-21; Slight 21-40; Moderate 41-60; Critical 61-80; Severe 81-100

APPENDIX 27

CATEGORY 2 CANDIDATE SPECIES

SPECIAL STATUS PLANTS

The sensitive species, those listed under the U.S. Fish & Wildlife Services (USFWS) Category 2, are being mapped, counted, and monitored. These species are also protected as though under the Endangered Species Act (ESA) until enough is learned of them to determine management direction through the USFWS' Plant Recovery Team.

The Category 2 species are:

Astragalus ampullarius, which has little information, as yet, gathered on it. Locations are known and this species occurs largely in Utah and comes down into Arizona on Cedar Ridge and the Kanab-Fredonia area, all of which are private and state lands. This species has not been found on BLM land on the Arizona Strip.

Astragalus holmgrenorum, which is being monitored, and as far as is known, occurs on two BLM sections of the Arizona Strip and overlaps largely into Utah. *Camissonia exilis*, a rare annual, provides observers little time to study its biological parameters as it emerges only when environmental conditions are perfect. It has been found in the Jacob Ranch area and Coyote Valley area in the district.

Coryphantha missouriensis var. *marstonii* has been recommended by the Recovery Team to be placed in Category 3B from Category 2. Category 3B is for species that are no longer considered taxonomically valid. It is now considered the same as *Coryphantha missouriensis* var. *missouriensis*, an unlisted species. To date this has not been published in the Federal Register.

Opuntia whipplei var. *multigeniculata*, as currently considered by taxonomic authorities, either does not occur on the Arizona Strip or is not different from the unlisted *Opuntia whipplei* var. *whipplei*. This data is being considered by the Plant Recovery Team.

Penstemon distans appears numerous and is currently being monitored to learn more of its cycles and what it is threatened by both from nature and man's activities.

Psoralea epipsila. There exists a taxonomic question on this species. Some taxonomists identify the plant that occurs on the Arizona Strip as *Psoralea megalantha* rather than *epipsila*.

Phacelia cephalotes is now known to be widespread (Southern Utah and Northern Arizona) and abundant. It will be considered by the Arizona Plant Recovery Team for recategorization to 3C. 3C is a category for species more widespread and with no identifiable threats.

Rosa stellata is perhaps the rarest plant on the Arizona Strip and is being searched for, monitored, and protected. This variety of desert rose grows in breccia pipes along Kanab Canyon. However, a taxonomic description needs to be finalized on this variety of *Rosa stellata*. Grand Canyon National Park and Lake Mead National Recreation Area have a significant population.

Astragalus geyeri var. *triquetris*. A specimen was found in 1940 in the Beaver Dam Wash area of the Arizona Strip. However, searches in recent years have been unsuccessful in locating specimens in the habitat. Brigham Young University has located specimens in neighboring Clark County, Nevada, but none in Arizona.

APPENDIX 28

IMPORTANT, ENDANGERED, THREATENED OR SENSITIVE WILDLIFE SPECIES ASSOCIATED WITH RIPARIAN AREAS

Name	Season	Significance	Occupies Specific Riparian Area?
Bald Eagle	Winter	Federal and State Endangered	No
Peregrine Falcon	Yearlong	Federal Endangered; State Candidate	No
Black Hawk	Summer	State Candidate	Beaver Dam Wash
Bells Vireo	Summer	Federal Candidate	No
Blue Grosbeak	Summer	Uncommon	No
Black-headed Grosbeak	Summer	Restricted habitats	No
Northern Oriole	Summer	Uncommon	No
Summer Tanager	Summer	Rare	No
Abert's Towhee	Summer	Rare	No
South Western Toad	Year-around	Lack of information	No
Great Plains Toad	Year-around	Hypothetical	No
Relict Leopard Frog	Yearlong	Federal and State Extinct	Virgin River
Pacific Tree Frog	Yearlong	Restricted distribution	Middle Springs
Woundfin Minnow	Yearlong Endangered	Federal and State	Virgin River
Virgin River Roundtailed Chub	Yearlong	Federal Proposed Endangered State Endangered	Virgin River
Razorback Sucker	Yearlong	Federal Candidate	Paria River
Virgin River	Yearlong	State Endangered; Federal Candidate	Virgin River Spinedace
Spotted Bat	Unknown	Federal and State Candidate	No
Belted Kingfisher	Rare	State Candidate	Virgin River
Willow Flycatcher	Summer	State Endangered	Virgin River
Grand Wash Spring Snail	Yearlong	Federal Candidate	Whiskey/Buckhorn/ Grapevine/Little Arizona

APPENDIX 28 (CONTINUED)

IMPORTANT, ENDANGERED, THREATENED OR SENSITIVE WILDLIFE SPECIES ASSOCIATED WITH RIPARIAN AREAS

Name	Season	Significance	Occupies Specific Riparian Area?
Virgin Spring Snail	Yearlong	Federal Candidate	Springs along Virgin River
American Bittern	Uncommon	State Candidate	No
Western Snowy Plover	Uncommon	Federal and State Candidate	No
Yellow-billed Cuckoo	Uncommon	State Threatened; Federal Candidate	Virgin River



APPENDIX 29

SPECIAL STATUS PLANT SPECIES ARIZONA STRIP DISTRICT

Plant Species	Status**	Known Number Of Plants	Estimated Total	Known Habitat Acres	# Of Study Plot/Tagged Plants	Data Questions
<i>Pediocactus sileri</i> Siler Pincushion Cactus	Endangered	10,500	30,000-50,000	330,000	5/500+	Total population
<i>Pediocactus bradyi</i> Brady Pincushion Cactus	Endangered	600	7,000-8,000	11,000	5/600	Total population
<i>Pediocactus peeblesianus</i> var. <i>fickeiseniae</i>	Category 1	250	1,000-5,000	7,020	3/51	Distribution
<i>Pediocactus paradinei</i> *	Category 1	Rare	Rare	2,000	None	
<i>Rosa stellata</i>	Category 2	142 clumps	142 clumps	5	1/60 clumps	Number and distribution
<i>Camissonia exilis</i>	Category 2	Rare	Unknown	15	None	Number and distribution
<i>Coryphantha missouriensis</i> var. <i>marstonii</i>	Category 2	Numerous Widespread	Unknown	7,020	None	None
<i>Astragalus ampullarius</i>	Category 2	Unknown	Unknown	Generally known	None	Number and distribution
<i>Opuntia whipplei</i> var. <i>multigeniculata</i>	Category 2	Unknown	Numerous Widespread	Generally known	None	Taxonomic/ Location
<i>Psoralea epipsila</i>	Category 2	Unknown	Widespread	Generally known	None	Taxonomic/ Location
<i>Phacelia cephalotes</i>	Category 2	Unknown	Widespread Numerous	Generally known	None	None
<i>Penstemon distans</i>	Category 2	7,500	50,000+	570-5,500	2/60	Number and distribution
<i>Astragalus holmgrenorum</i>	Category 2	Unknown	Unknown	1,280	1/100+	Distribution
<i>Cirsium virginensis</i>	Category 2	Unknown	Small	Generally	None	Distribution known
<i>Astragalus geyeri</i> var. <i>trigetetrus</i>	Category 2	Unknown	Unknown	Unknown	None	Not located

* As most occurs on U.S. Forest Service, that agency has studies on this cactus.

** U.S. Fish & Wildlife Service (FWS) is source.

See Appendix 21, Discussion on Candidate Plants.

Candidate Category 1 contains those species for which the FWS has sufficient information on hand to support their being listed as threatened or endangered. Category 1 species are likely to be proposed for listing in the foreseeable future and for that reason are included on species lists provided by us under Section 7 of the Act.

Candidate Category 2 contains species for which the FWS does not have sufficient information on hand to support their being listed as threatened or endangered at this time. The FWS is actively seeking information on these species to determine if they warrant inclusion in a different category. Category 2 species are not included on species lists provided under Section 7 because their eventual status is uncertain.

Candidate Category 3 contains three subcategories. Subcategory 3A contains species that are no longer being considered for listing as threatened or endangered because the species is extinct, subcategory 3B contains species not regarded as taxonomically valid, and subcategory 3C contains species more widespread or not subject to an identifiable threat. Any species in this category may be re-evaluated in the future if a change in condition warrants such reevaluation, but they are not presently considered candidates for listing.

APPENDIX 30

SUMMARY OF PAST ACTIVITY AND PROJECTIONS FOR OIL & GAS DEVELOPMENT

Since no oil or gas has been produced from this area, it is difficult to know how much surface disturbance would occur as a result of field development. In order to assess the cumulative environmental effects of lease issuance, several assumptions will be made concerning both exploration and hypothetical development of oil and gas in the district. These assumptions are outlined as follows:

1. With the exception of wilderness areas, unleased areas would continue to be available for leases.
2. Geologic history, source rock, reservoir rock, thermal regemine, sealing and trapping are assumed to all be appropriate for hydrocarbon origination, migration, accumulation and preservation in the sedimentary rocks at depths within the district.
3. Any economically recoverable oil and gas accumulations occurring under leased lands would be developed.
4. Exploration would continue at the same rate it has since exploration began in 1909.
5. While exploration may occur throughout the district, development would occur only in those areas rated as having a moderate potential for hydrocarbon accumulation.
6. One oil or gas field would be developed during the life of the plan.
7. Disturbance associated with each well pad and access would average 8 acres.
8. Reclamation of disturbed areas would be successful and all reclamation would commence immediately following cessation of exploration operations or depletion of the resource. Reclamation, consisting of reshaping the surface, soil stabilization and reestablishment of vegetation would be completed within ten years.
9. Laws and regulations concerning the protection of other resource values including cultural resources and threatened or endangered plant and animal species would be complied with and would be effective.

Based on the above assumptions, one oil and gas exploration well would be drilled on the average of every two years in the district. This would result in approximately 8 exploration wells being drilled over the life of the plan. Surface disturbance resulting from this exploration would total approximately 65 acres within the entire district. Assuming that no production would be established from any of these exploratory wells, reclamation would be initiated immediately following exploration operations. Reclamation would be successful and all disturbed areas would be fully reclaimed within ten years of exploration operations.

For the purpose of this analysis, it is assumed that development of one oil or gas field would occur over the life of the plan. Oil fields in the immediate vicinity of the Arizona Strip District include the Virgin and Upper Valley fields. The Virgin oil field is not a good analog for oil field development because production from each well was so low (1-2 bbl/day) and so many wells were needed for production for the size of the area (250 wells/2,400 acres), that a field of this type could not be developed under current economic conditions. The Upper Valley field, in contrast, is a more realistic analog of the type of field development which may be expected on the Arizona Strip District. In this field, 3,350 acres have been proven productive. Development consists of 25 development wells. This equates to approximately one well per 130 acres.

While no direct connection is inferred between this field and hydrocarbon accumulations which may underlie the district, the Upper Valley is an example of field type and size. Assuming a field size of 3,500 acres and an average well spacing of 80 acres, approximately 44 wells would be required to develop the hypothetical field. Assuming 8 acres disturbed per well, approximately 350 acres would be disturbed through field development.

APPENDIX 31

IMPACTS FROM PAST AND REASONABLE FORESEEABLE LOCATABLE MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

PAST ACTIVITY:

1. Uranium (FY 1980-1988, 9 years)

Exploration

# cases with activity	384	cases
Ave. # cases/year	43	cases/year
# acres disturbed by exploration	245	acres
# acres disturbed by exploration access	170	acres
# acres disturbed by exploration (total)	415	acres
Ave. # acres disturbed by exploration/year	46	acres/year

Development

# mine yard acres	139	acres
# upgraded access acres (mi)	98	acres (32)
# new access acres (mi)	16	acres (4)
# powerline acres (mi)	54	acres (45)
# total acres	307	acres
Ave. # acres disturbed/year (total)	34	acres/year

2. Gypsum (FY 1981-1988, 8 years)

# cases with activity	9	cases
# acres disturbed (exploration, mining, access)	28	acres
Ave. # acres disturbed/year	3.5	acres/year

3. Other (FY 1981-1988, 8 years)

# cases with activity	8	cases
# acres disturbed (exploration, mining, access)	1.2	acres
Ave. # acres disturbed/year	0.2	acres/year

4. Total acres disturbed (1980-1989) 750 acres

REASONABLY FORESEEABLE ACTIVITY:

1. Uranium (FY 1990-2005, 16 years)

Exploration

For the purposes of this analysis, it is assumed that uranium resource exploration will continue to occur in areas of high favorability for the occurrence of the resource. The exploration rate is also expected to continue at the same rate it has over the past 9 years.

# cases with activity	688	cases
# acres disturbed by exploration	430	acres
# acres disturbed by exploration access	310	acres
# acres disturbed by exploration (total)	740	acres

APPENDIX 31 (CONTINUED)

IMPACTS FROM PAST AND REASONABLE FORESEEABLE LOCATABLE MINERAL RESOURCE EXPLORATION AND DEVELOPMENT

Development

Uranium resource development is expected to occur in areas of high uranium resource potential and no extensive overburden of volcanic or sedimentary rock which would significantly complicate exploration. For analysis purposes it is assumed that one new underground mine would be proposed each year over the life of the plan. Each mine would be in a development stage for approximately two years, production for seven years, and reclaimed within one year of depletion of the ore body.

# mine yard acres	240	acres
# upgraded access acres (mi)	180	acres (60)
# new access acres (mi)	30	acres (7)
# powerline acres (mi)	100	acres (80)
# total acres	550	acres

2. Gypsum (FY 1990-2005, 16 years)

For the purposes of this analysis, it is assumed that all exploration for and development of gypsum would be confined to those areas of high favorability for the occurrence of the resource located in the vicinity of T. 41 N., R. 11 and 12 W. This is due to the surface exposure of gypsum in this area and nearby availability of power and a transportation network. Exploration and development is expected to occur at the same rate it has over the past eight years.

# cases with activity	16	cases
# acres disturbed (exploration, mining, access)	60	acres

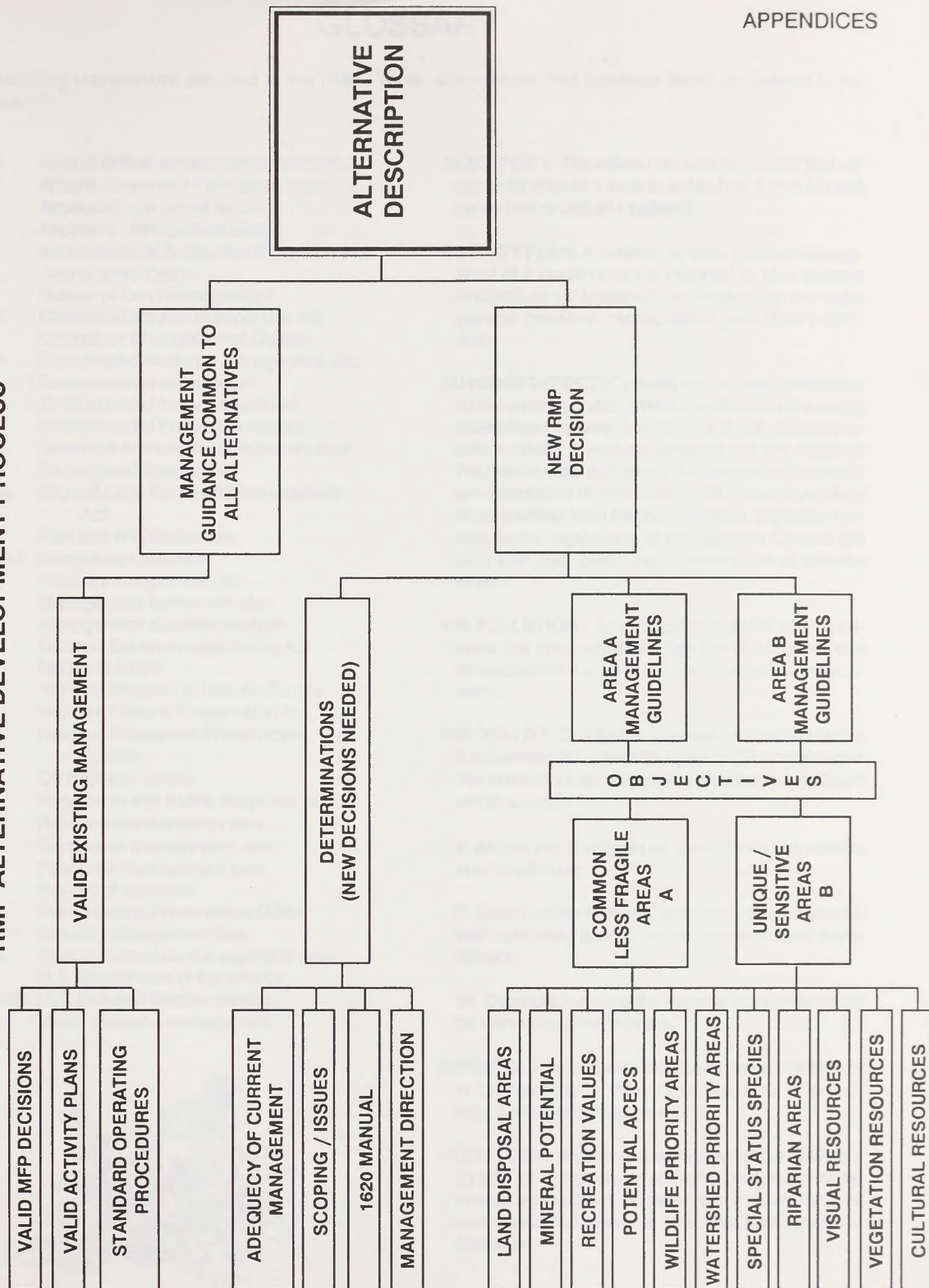
3. Other (FY 1990-2005, 16 years)

For the purposes of this analysis, it is assumed that the exploration for other mineral resources will occur at the same rate it has over the past eight years. The exploration for these mineral resources is expected to be confined to those areas of moderate to high favorability for the occurrence of locatable mineral resources.

# cases with activity	16	cases
# acres disturbed (exploration, mining, access)	5	acres

4. Total acres disturbed (1990-2005) 1,355 acres

APPENDIX 32 RMP ALTERNATIVE DEVELOPMENT PROCESS



GLOSSARY

The following abbreviations are used in this RMP. Those abbreviations that represent terms are defined in the glossary.

ACEC	Area of critical environmental concern
AGFD	Arizona Game and Fish Department
APD	Application for permit to drill
AMP	Allotment management plan
ARPA	Archaeological Resources Protection Act
AUM	Animal unit month
BLM	Bureau of Land Management
C&MU	Classifications and Multiple Use Act
CEQ	Council on Environmental Quality
CRMP	Coordinated resource management plan
EA	Environmental assessment
EIS	Environmental impact statement
EPA	Environmental Protection Agency
ERMA	Extensive recreation management area
ESA	Endangered Species Act
FLPMA	Federal Land Policy and Management Act
FWS	Fish and Wildlife Service
HAZMAT	Hazardous materials
HMP	Habitat management plan
MFP	Management framework plan
MSA	Management situation analysis
NEPA	National Environmental Policy Act
NOI	Notice of intent
NRHP	National Register of Historic Places
NHPA	National Historic Preservation Act
NWPS	National Wilderness Preservation System
OHV	Off-highway vehicle
R&PP	Recreation and Public Purposes Act
RCA	Resource conservation area
RMA	Recreation management area
RMP	Resource management plan
ROD	Record of decision
SHPO	State Historic Preservation Officer
SMA	Special management area
SRMA	Special recreation management area
USDI	U.S. Department of the Interior
USF&WS	U.S. Fish and Wildlife Service
VRM	Visual resource management

ACRE-FOOT: The volume of material or water that will cover an area of 1 acre to a depth of 1 foot (43,560 cubic feet or 325,851 gallons).

ACTIVITY PLAN: A detailed, specific plan for management of a single resource program or plan element undertaken as necessary to implement the more general resource management plan (RMP) decisions.

ADVERSE EFFECT (Cultural Resources): Alteration of the characteristics which contribute to the use(s) determined appropriate for a cultural resource or which qualify a cultural property for the National Register to such a degree that the appropriate use(s) are diminished or precluded or the cultural property is disqualified from National Register eligibility. Criteria in the regulations of the Advisory Council (36 CFR Part 800) guide the determination of adverse effects.

AIR POLLUTION: Accumulation of aerial wastes beyond the concentrations that the atmosphere can absorb and which may, in turn, damage the environment.

AIR QUALITY CLASSES: Classes established by the Environmental Protection Agency (EPA) that define the amount of air pollution considered significant within an area:

I: Almost any change in air quality would be considered significant;

II: Deterioration normally accompanying moderate, well-controlled growth would be considered insignificant;

III: Deterioration up to the national standards would be considered insignificant.

AIRSHED: A region within which air movement tends to be confined by topographic barriers, meteorology, and local circulations.

ALKALI SOIL: Soil having so high a degree of alkalinity (pH 8.5 or higher), or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.



ALLOTMENT: An area of land assigned to one or more livestock operators for grazing livestock. Allotments generally consist of BLM land but may also include state-owned and private land. An allotment may include one or more separate pastures. Livestock numbers and seasons of use are specified for each allotment.

ALLOTMENT MANAGEMENT PLAN (AMP): A livestock grazing management plan for a specific allotment based on multiple-use resource management objectives. The AMP considers livestock grazing in relation to other uses of the range and in relation to renewable resources—watershed, vegetation and wildlife. An AMP establishes the seasons-of-use, the number of livestock to be permitted on the range and the rangeland developments needed.

ALTERNATIVES: Different ways of addressing the planning issues and management activities considered in the planning process. These serve to provide the decision maker and the public a clear basis for choices among options.

ALLUVIAL: Relating to or formed by water carrying and depositing rocks, soil, and other materials.

AMBIENT AIR QUALITY: Prevailing condition of the atmosphere at a given time; the outside air. Concentration levels in the outside air for a specified pollutant and a specified averaging time period within a given area.

ANIMAL UNIT MONTH (AUM): The amount of forage necessary for the sustenance of one cow or five sheep for 1 month.

APPARENT TREND: Immediate or short-term tendency, used mainly to record vegetative response to management actions.

AQUATIC HABITAT: Habitat that is inundated by water with a frequency sufficient to support a prevalent form of aquatic life.

AQUIFER: An underground body of rock or similar material capable of storing water and transmitting it to wells or springs.

ARCHAEOLOGICAL DISTRICT: An area that provides a concentration of cultural properties in a discrete, definable location.

ARCHAIC: Archaeological period of about 8,000 to 300 BC.

AREA OF CRITICAL ENVIRONMENTAL CONCERN (ACEC): An area within the public lands where special management attention is required to protect important historic, cultural, or scenic values, fish and wildlife or natural systems or processes, or to protect life and safety from natural hazards.

ARIZONA STRIP: The northwest portion of Arizona lying north of the Colorado River.

AVERAGE LICENSED USE: The average number of AUMs authorized during the past 5 years. This figure depends on forage production and economics in any one year.

BASELINE: Conditions, including trends, existing in the human environment before a proposed action is begun; a benchmark state from which all environmental consequences are forecast and all changes expected to occur under existing management are projected. (For National Environmental Policy Act (NEPA) purposes, existing management is the no-action alternative.)

BLOCK (verb)/BLOCKED-UP (adjective): v. to consolidate like things, such as ownership of land, e.g., the BLM acquires privately owned acreage in the middle of a large area of public land.

BRECCIA PIPE: A vertical pipe-like column of broken rock. Occasionally contain concentrations of metallic minerals deposited by mineralized fluids.

BROWSE: As a verb, to consume or feed on (a plant); as a noun, the tender shoots, twigs, and leaves of trees and shrubs often used as food by cattle, deer, elk, and other animals.

BRUSH: Vegetation consisting primarily of bushes and shrubs, usually undesirable for livestock or timber management. It may sometimes be of value for browse or for watershed protection.

BUTTE: An isolated hill with steep sides and a flat top.

CANDIDATE SPECIES:

Category I: Plant and animal species for which the USF&WS currently has on file substantial information to support a proposal to list as threatened or endangered.

Category II: Plant and animal species for which current information indicates that a proposal to list as threatened or endangered is possibly appropriate, but for which more information is needed to support a listing proposal.

CARRYING CAPACITY (GRAZING): The maximum stocking rate possible without inducing damage to vegetation or related resources such as watershed. Normally expressed in terms of acres per AUMs, or sometimes referred to as the total AUMs that are available in any given area, such as a grazing allotment.

CARRYING CAPACITY (RECREATION): The maximum number of people at one time that an area or facility can accommodate without impairing the natural, cultural, or developed resource.

C&MU CLASSIFICATION: Lands classified under the Classification and Multiple Use Act.

CHAINING: A method of vegetation treatment in which large, woody species such as pinyon and juniper are removed with a heavy chain dragged between two bulldozers.

CHANGE AGENT: The apparent cause of an environmental consequence, an antecedent related empirically to an environmental consequence.

CLIMAX VEGETATION: The final vegetation community that emerges after a series of successive vegetational stages. The climax community perpetuates itself indefinitely unless disturbed by outside forces. This differs from the potential natural community (PNC) in that it does not include naturalized non-native species.

COMMON VARIETY: Mineral deposits which do not possess a distinct special economic value over and above the normal use of the general run of such deposits.

COMMON VARIETIES: Mineral deposits which, although they may have value for use in trade, manufacture, the sciences, or in the mechanical or ornamental arts, do not possess a distinct special economic value over and above the normal uses of the general run of such deposits.

COMMUNITY: A group of plants and animals living together in a common area and having close interactions.

CONDITIONAL FIRE SUPPRESSION: Current (1988) Bureau of Land Management (BLM) policy of planning fire suppression actions to minimize costs based on acceptable resource loss in certain areas.

CONSERVATION FOR FUTURE USE: A cultural resource will be separated and protected from other noncompatible land uses and preserved in place because (1) that particular site type is scarce or unique, (2) its information potential cannot be realized through available archaeological methods or (3) it represents an outstanding example of a particular site type.

CONTRAST (VISUAL): The effect of a striking difference in the form, line, color, or texture of an area being viewed.

CONTRAST RATING: A method of determining the extent of visual impact of an existing or proposed activity that will modify any landscape feature.

COORDINATED RESOURCE MANAGEMENT PLAN (CRMP): A plan for management of one or more allotments that involves all the affected resources, e.g., range, wildlife and watershed.

CRITICAL SOILS: Soils that (1) contain very highly saline soils and/or (2) are very highly susceptible to water erosion.

CRITICAL WATERSHED: An area of soils that (1) have a high potential for salt yield; (2) are subject to severe water and wind erosion when disturbed; (3) have high runoff potential during storm events; (4) are subject to frequent flooding; or (5) have a potential for loss of vegetation productivity under high rates of wind or water erosion.

CRITICAL WILDLIFE HABITAT: The area of land, water and airspace required for the normal needs and survival of a species.

CRUCIAL WILDLIFE HABITAT: Sensitive use areas that are necessary to the existence, perpetuation, or introduction of one or more species during critical periods of their life cycles.

CRYPTOGAMIC SOIL: A plant that reproduces by spores instead of by seeds (e.g., mosses, algae, and fungi), which occurs on the soil surface and generally produces an irregular crust.

CULTURAL CLEARANCE: A statement, based upon an inventory, that a given tract of land contains no cultural resource values or that, if cultural resources are present, compliance actions will be undertaken and other adverse impacts on them sufficiently mitigated.

CULTURAL PROPERTY: Any definite location of past human activity, habitation or use identified through a field inventory (see below), historical documentation or oral evidence. This term may include (1) archaeological or historic sites, structures and places and (2) sites or places of traditional cultural or religious importance to a specific group, whether or not represented by physical remains. Cultural properties are managed by the system of inventory evaluation and protection and use.

CULTURAL RESOURCE INVENTORY: A descriptive listing and documentation of cultural resources, including photographs and maps; included are the processes of locating, identifying, and recording sites, structures, buildings, objects, and districts through library and archival research, information from persons knowledgeable about cultural resources, and varying levels of intensity of on-the-ground field surveys. There are three classes of cultural resource inventories:

I (Existing data inventory): An inventory study of a defined area designed to provide (1) a narrative overview derived from existing cultural resource information, and (2) a compilation of existing cultural resource site record data on which to base the development of BLM's site record system.

II (Sampling field inventory): A sample-oriented field inventory designed to locate and record, from surface and exposed profile indications, all cultural resource sites within a portion of a defined area in a manner that will allow an objective estimate of the nature and distribution of cultural resources in the entire defined area.

III (Intensive field inventory): An intensive field inventory designed to locate and record, from surface and exposed profile indications, all cultural resource sites within a specified area.

CULTURAL RESOURCES: Those fragile and nonrenewable remains of human activities, occupations, and endeavors as reflected in sites, buildings, structures, or objects, including works of art, architecture, and engineering. Cultural resources are commonly

discussed as prehistoric and historic values, but each period represents a part of the full continuum of cultural values from the earliest to the most recent.

CULTURAL SITE: A physical location of past human activities or events. Cultural resource sites are extremely variable in size and range from the location of a single cultural resource object to a cluster of cultural resource structures with associated objects and features. Prehistoric and historic sites which are recorded as cultural resources have sociocultural or scientific values and meet criterion of being more than 50 years old.

CUSTODIAL MANAGEMENT: A limited form of resource management employed on lands with low resource production potential that are producing near potential and where opportunities for positive economic return on public investment do not exist.

DESIGNATED RIGHT-OF-WAY CORRIDOR: A parcel of land, either linear or areal, that has been identified by law, by Secretarial Order, through the land use planning process, or by other management decision, as a preferred location for existing and future right-of-way grants and suitable to accommodate more than one type of right-of-way or one or more rights-of-way which are similar, identical, or compatible.

DIRECTIONAL DRILLING: Slant drilling or drilling at an angle. Directional drilling is sometimes utilized when the operator is not allowed to occupy the surface of a given tract of land, but still wishes to drill a structure or target beneath that tract.

DISTANCE ZONE: The area that can be seen from a travel route as foreground-middleground (up to 3 to 5 miles), background (from foreground-middleground up to 15 miles), and areas which are seldom seen (or beyond 15 miles).

DRAINAGE BASIN: An area bounded by a water parting and drained by a particular river and its tributaries (watershed).

ECOLOGICAL STATUS: The present state of vegetation of an ecological site in relation to the natural potential plant community for that site. It is an expression of the relative degree to which the kinds, proportions, and amounts of plants in a plant community resemble that of the PNC plant community. Ecological status was formerly known as range condition.

ECOLOGICAL SITE: A distinctive kind of rangeland that differs from other kinds of rangeland in its ability to produce a characteristic natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is capable of supporting a native plant community typified by an association of species that differs from that of other ecological sites in the kind or proportion of species or in total production. Ecological site is synonymous with range site.

ECONOMIC IMPACT: The change, positive or negative, in economic conditions (including distribution and stability of employment and income in affected local and regional economies) that directly or indirectly result from an activity, project, or program.

ECOSYSTEM: A complex self-sustaining natural system which includes living and nonliving components of the environment and the circulation of matter and energy between organisms and their environment.

ENDANGERED SPECIES: An animal or plant whose prospects of survival and reproduction are in immediate jeopardy, and as further defined by the Endangered Species Act of 1973, as amended.

ENDANGERED SPECIES ACT OF 1973 (as amended): Federal law to ensure that no federal action will jeopardize federally listed or proposed threatened or endangered species of plants or animals.

ENVIRONMENTAL ASSESSMENT (EA): The procedure for analyzing the impacts of some proposed action on a given environment and the documentation of the analysis. An EA is similar to an environmental impact statement (EIS) but is generally smaller in scope. An EA may be preliminary to an EIS.

ENVIRONMENTAL CONSEQUENCE: A temporal or spatial change in the human environment caused by an act of man. The change should be (1) perceptible, (2) measurable, and (3) relatable through a change agent to a proposed action or alternative. A consequence is something that follows an antecedent (as a cause or agent). Consequences are synonymous with impacts and effects. In the CEQ regulations, consequences are caused by a proposed action (40 CFR 1508.7; 1508.8; 1508.14).

ENVIRONMENTAL IMPACT STATEMENT (EIS): A written analysis of the impacts on the environment of a proposed project or resource management plan.

EPHEMERAL STREAM: A stream that flows only briefly after a storm or during snowmelt.

EROSION: The wearing away of the soil and surface by running water, wind, ice or other geological agents.

EVALUATION (Cultural Resources): The analysis of cultural resource inventory records, the application of professional judgment to identify characteristics that contribute to possible uses for recorded cultural resources, and the recommendation of appropriate use(s) for each resource or group of resources. National Register eligibility criteria, 36 CFR Part 60, are interpreted through or with reference to bureau evaluation criteria.

EXCAVATION (ARCHAEOLOGICAL): The scientifically controlled recovery of subsurface materials and information from a cultural site. Recovery techniques are relevant to research problems and are designed to produce maximum knowledge about the site's use, its relation to other sites and the natural environment, and its significance in the maintenance of the cultural system.

EXISTING RIGHT-OF-WAY CORRIDOR: A parcel of land, without fixed limits or boundaries, that is being used as the location for one or more rights-of-way.

EXOTIC PLANTS: Those plant species that are not native to an area.

EXTENSIVE RECREATION MANAGEMENT AREAS (ERMAs): Areas where recreation is unstructured and dispersed and where minimal recreation-related investments are required. ERMAs, which constitute the majority of the Arizona Strip public land, provide recreation visitors the freedom of choice with minimal regulatory constraint.

FEDERAL LAND POLICY AND MANAGEMENT ACT OF 1976 (FLPMA): Public Law 94-579, which gives the BLM legal authority to establish public land policy, to establish guidelines for administering such policy and to provide for the management, protection, development and enhancement of the public land.

FEDERAL LAND: Land owned by the United States, without reference to how the land was acquired or which federal agency administers the land, including mineral or coal estates underlying private surface.

GLOSSARY

FIRE MANAGEMENT: The integration of fire protection, prescribed burning, and fire ecology knowledge into multiple use planning, decision making, and land management activities. Fire management is a program, not of letting fires burn, but rather of placing fire in perspective with overall land management objectives to fulfill the needs of society.

FLOOD PEAK: The highest value of the stage or discharge attained by a flood; thus, peak stage or peak discharge.

FLOODPLAIN: The nearly level alluvial plain that borders a stream or river and is subject to inundation during high water periods; the relatively flat area or lowland adjoining a body of standing or flowing water which has been or might be covered by floodwaters.

FORAGE: Vegetation of all forms available for animal consumption.

FORB: A broadleaved herb other than grass.

FORMATIVE: Archaeological period of about 300 BC to 1150 AD. Same timeframe as Anasazi or Basket-maker and Pueblo periods.

FREQUENCY: A quantitative expression of the presence or absence of individuals of a species in a population. It is defined as the percentage of occurrence of a species in a series of samples of uniform size.

FULL FIRE SUPPRESSION: An all-out effort to extinguish wildfires to prevent unacceptable resource damage or loss of life and property.

GOAL: The desired state or condition that a resource management policy or program is designed to achieve. A goal is usually not quantifiable and may not have a specific date by which it is to be completed. Goals are the bases from which objectives are developed.

GRAZING PREFERENCE: The total number of AUMs of livestock grazing on public lands apportioned and attached to base property owned or controlled by a permittee or lessee. Active preference and suspended preference combined make up total grazing preference.

GRAZING SYSTEM: Sequence of livestock grazing, by area, designed to accomplish management objectives.

GROUND WATER: Water filling the unblocked pores of underlying material below the water table.

HABITAT: A specific set of physical conditions that surround the single species, a group of species, or a large community. In wildlife management, the major components of habitat are considered to be food, water, cover, and living space.

HABITAT MANAGEMENT PLAN: A written and officially approved plan for a specific geographic area which identifies wildlife habitat and related objectives, establishes the sequence of actions for achieving objectives and outlines procedures for evaluating accomplishments.

HAZARDOUS WASTE OR MATERIAL (HAZMAT): Any substance that poses a threat to the health or safety of persons or the environment. These include any material that is toxic, ignitable, corrosive or radioactive.

HERD MANAGEMENT AREA PLAN (HMAP): A plan for the management of a geographic area used by wild horses or burros. A HMAP outlines details of a burro or horse capture plan, adoption program and long-term management of populations.

HUMAN ENVIRONMENT: The natural and physical environment and the relationship of people with that environment. (See complete definition in the CEQ regulations, 40 CFR 1508.14.)

INDICATOR: An element of the human environment affected, or potentially affected, by a change agent. An indicator can be a structural component, a functional process, or an index. A key indicator integrates several system elements in such a way as to indicate the general health of that system.

INDIRECT EFFECT: Economic impacts that result when supporting industries sell goods or services to directly affected industries or businesses.

INDIRECT OR INDUCED EMPLOYMENT: Employment in all sectors of a regional economy resulting from an increase or decrease in direct employment.

INHOLDING: A tract of land, located within a large block of public land, that is owned by a private individual or by the state.

INTEGRAL VISTA: A viewshed, or area of view, from a pristine location, such as from a class I air quality area, that has been identified as being an important attribute to the area from which it is being viewed.

INTERDISCIPLINARY APPROACH: Cooperative, interactive consultation and analysis among individuals representing two or more disciplines. Such an approach should "insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making, which may have an impact on man's environment" [NEPA 102(2)(A)].

INTRUSION (VISUAL): A land, vegetation, or structural feature that is generally considered out of context with the characteristic landscape.

ISOLATED TRACT: A parcel of public lands surrounded by nonfederal lands.

ISSUE: See planning issue.

KEY AREA: A relatively small portion of a rangeland selected because of its location, use, or grazing value as an area on which to monitor the effects of grazing use. It is assumed that key areas, if properly selected, will reflect the effects of current grazing management over all or part of a pasture, allotment, or other grazing unit.

KNOWN GEOLOGIC STRUCTURE (KGS): An area where an accumulation of oil or gas has been discovered by drilling and determined to be productive; the limits of the KGS include all acreage that is presumptively productive.

LAND DISPOSAL: A transaction that leads to the transfer of title of public lands from the federal government.

LAND TREATMENT: Alteration of the soil and/or vegetation of an area by mechanical, biological, or chemical means, or by burning. Land treatments are implemented to reduce erosion or improve vegetation for livestock or wildlife.

LEACH MINING: The technique of mineral extraction where a variety of chemical solutions are used to extract minerals which are soluble within those liquids. This technique may be used to extract minerals from abandoned tailings, crushed ores and in-place ores.

LEASABLE MINERALS: Minerals such as coal, oil shale, oil and gas, phosphate, potash, sodium, geothermal resources and all other minerals that may be acquired under the Mineral Leasing Act of 1920, as amended.

LEGAL DESCRIPTION: The description of a particular parcel of land according to the official plat of its cadastral survey, including Township, Range and Section numbers.

LIMITED SUPPRESSION: A policy of limiting fire suppression activity in areas where the expense associated with usual suppression procedures is not warranted (usually because of extreme suppression difficulty or because the values threatened are low).

LOCATABLE MINERALS: Any valuable mineral that is not salable or leasable, including gold, silver, copper, tungsten and uranium, etc. (Maley, 1983).

LODE MINING: Extraction of minerals from deposits which are still in place within the confines of the surrounding country rock.

M, I, AND C CATEGORIZATION: The grouping of allotments into three different categories (M= maintain, I= improve, and C= custodial) for management purposes.

MANAGEMENT FRAMEWORK PLAN (MFP): A planning decision document prepared before the effective date of the regulations implementing the land use planning provisions of FLPMA.

MANAGEMENT SITUATION ANALYSIS (MSA): A step in the BLM planning process that identifies existing management, physical resources and opportunities to meet the needs, concerns and issues identified through resource management planning. The MSA results in a reference document, which is kept in the resource area office. The MSA document is open for public inspection but is not distributed to the public.

MANAGEMENT USE: Study of a cultural resource to obtain specific information on (1) the kinds and rates of natural and human-caused deterioration or (2) the effectiveness of protection measures.

METALLIC MINERALS: Those minerals whose native form is metallic or whose principal products after refinement are metallic.

MINERAL ENTRY: The location of mining claims by an individual to protect his right to a valuable mineral.

MINERAL ESTATE: Mineral and/or subsurface ownership.

MINERAL WITHDRAWAL: Closure of land to mining laws, including sales, leasing and location, subject to valid existing rights.

MITIGATING MEASURES: Methods used (often included as stipulations or special conditions attached to a lease) to reduce the significance of or eliminate an anticipated environmental impact.

MITIGATION: The lessening of a potential adverse effect by applying appropriate protection measures, the recovery of cultural resource data or other measures.

MONITORING: The orderly collection and analysis of data to evaluate progress in meeting resource management objectives. Monitoring may also include: (1) the collection of data to evaluate progress in complying with laws, regulations, policies, executive orders, and management decisions, and (2) the collection of data to assist in resource protection. Sampling of data and observation of progress toward plan objectives, the accuracy of impact analysis, and the effectiveness of mitigation measures are also of particular interest in terms of RMP monitoring activities.

MOTORIZED TRAVEL: Travel in any motorized vehicle for recreation purposes; includes driving or riding in off-highway areas (OHV travel).

MULTIPLE-USE: Management of public lands and their various resource values so that they are used in the combination best meeting the present and future needs of the American people. Relative resource values are considered, not necessarily the combination of uses that will give the greatest potential economic return or the greatest unit output.

NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS): National standards, established under the Clean Air Act by the Environmental Protection Agency (EPA), prescribing levels of pollution in the outdoor air which may not be exceeded. There are two levels of NAAQS: primary (set at a level to protect the public health from air pollution damage), and secondary (set at a level to protect public welfare from air pollution damage).

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) OF 1969: A law enacted on January 1, 1970 that established a national policy to maintain conditions under which man and nature can exist in productive harmony and fulfill the social, economic and other requirements of present and future generations of Americans. It established the Council on Environmental Quality for coordinating environmental matters at the federal level and to serve as advisor to the President on such matters. The law made all federal actions and proposals which could have significant impact on the environment subject to review by federal, state and local environmental authorities.

NATIONAL HISTORIC PRESERVATION ACT (NHPA): The primary federal law providing for the protection and preservation of our cultural resources. Making it a national policy to preserve our cultural heritage, NHPA established the National Register of Historic Places, the Advisory Council on Historic Preservation and State Historic Preservation Officers.

NATIONAL REGISTER OF HISTORIC PLACES (NRHP): A list of districts, sites, buildings, structures and objects significant in American history, architecture, archaeology and culture maintained by the Secretary of the Interior. Expanded as authorized by Section 2(b) of the Historic Sites Act of 1935 (16 U.S.C. 462) and Section 101(a)(1)(A) of the National Historic Preservation Act.

NATIONAL WILDERNESS PRESERVATION SYSTEM: A system composed of federally owned areas designated by Congress as wilderness areas. These areas shall be administered for the use and enjoyment of the American people; management actions will preserve wilderness values for future use and enjoyment.

NATURAL AREA: Land managed for (1) retention of its typical or unusual plant or animal types, associations or other biotic phenomena or (2) its outstanding scenic, geologic, soil or aquatic features or processes.

NATURAL HAZARD: A natural characteristic of land or water resources or areas that: (1) constitutes conditions significantly dangerous, or potentially significantly dangerous, to human life, or property, or that (2) would be significantly dangerous to life or the safety of property if development or other activity were permitted. Such a hazard may be either existing or considered likely to occur in the future.

NEPA DOCUMENTATION: A document prepared to assess environmental impacts of a proposed action, as required by NEPA and the CEQ regulations at 40 CFR 1500. Four types of documents could be prepared, depending on the scope of the proposal: an environmental impact statement, for major actions; and environmental assessment, for actions with no significant impacts; a categorical exclusion, for certain actions predetermined to have no significant impacts; or a preemptory rejection, for projects that are not feasible from a legal or technical standpoint.

NONPOINT POLLUTION: That from scattered sources, as opposed to pollution from one location, e.g., manufacturing plant.

NONUSE: Current authorized grazing use (in AUMs) that is not used during a given time period. Nonuse is applied for and authorized on an annual basis.

NOTICE OF INTENT: A notice submitted to BLM by a geophysical exploration company outlining a proposed oil and gas exploration program.

OFF-HIGHWAY VEHICLE (OHV): Any motorized vehicle designed for cross-country travel over any type of natural terrain. Exclusions (from Executive Order 11644, as amended by Executive Order 11989) are any military, fire, emergency or law enforcement vehicles while being used for emergency purposes, any vehicle whose use is expressly authorized or otherwise officially approved, vehicles in official use and any combat support vehicle in times of national defense emergencies.

OFF-HIGHWAY VEHICLE DESIGNATIONS:

Open: Designated areas and trails where OHVs may be operated (subject to operating regulations and vehicle standards set forth in BLM Manuals 8341 and 8343).

Limited: Designated areas and trails where the use of OHVs is subject to restrictions, such as limiting the number or types of vehicles allowed, dates and times of use (seasonal restrictions); limiting use to existing roads and trails or limiting use to designated roads and trails. Combinations of restrictions are possible, such as limiting use to certain types of vehicles during certain times of the year.

Closed: Designated areas, roads and trails where the use of OHVs is permanently or temporarily prohibited. Emergency use of vehicles is allowed.

PALATABILITY: The relish with which a particular species or plant part is consumed by an animal.

PALEOINDIAN: Archaeological period of about 12,000 to 8,000 BC.

PALEONTOLOGY: The study of fossils.

PARTICULATE MATTER: Any material, except water, in a chemically uncombined form that is or has been airborne and exists as a liquid or solid at standard temperature and pressure. Minute particles of coal dust, fly ash, and oxides temporarily suspended in the atmosphere.

PASTURE: As used in this document, a subdivision of a grazing allotment.

PATENT: A government deed that conveys legal title for land to an individual or another government entity.

PAYMENT IN LIEU OF TAXES (PILT): Payments to local or state governments based on ownership of federal land and not directly dependent on production of outputs or receipt sharing.

PERMEABILITY (SOIL): The ease with which gases or liquids penetrate or pass through soil.

PETROGLYPH: Prehistoric rock art, pecked into a stone surface.

PHENOLOGY: The science concerned with periodic biological events in their relation to seasonal climatic changes. Plant phenology refers to dates of sprouting, flowering, seed production, and regrowth, as well as other observable occurrences in plant development.

PICTOGRAPH: Prehistoric rock art, either drawn or painted onto a stone surface or pecked into such a surface.

PLACER MINING: That form of mining in which the surficial detritus (surface soil) is washed for gold or other valuable minerals (Dictionary of Geologic Terms, Anchor Press, 1979).

PLANNING CRITERIA: The standards or rules and other factors developed by the manager and interdisciplinary team for their use in forming judgments about decision making, analysis, and data collection during planning.

GLOSSARY

PLAN OF OPERATIONS: As used in this document, a plan submitted by an operator (lessee or mining claimant) which outlines in detail proposed exploration and mining activities that would disturb more than 5 acres.

PLANT VIGOR: The relative well-being and health of a plant as reflected by its ability to manufacture sufficient food for growth and maintenance.

POTENTIAL NATURAL COMMUNITY VEGETATION: The final vegetation community that emerges after a series of successive vegetational stages. The climax community perpetuates itself indefinitely unless disturbed by outside forces.

POT HUNTING: Illegal collection of artifacts, either from the land surface or by digging into an archaeological site.

PREFERRED: That plan alternative, in the draft environmental analysis or impact statement, which management has initially selected as offering the most acceptable resolution of the planning issues and management concerns.

PRESCRIBED FIRE: The skillful application of fire to natural fuels under conditions of weather, fuel moisture, soil moisture, etc., that will allow confinement of the fire to a predetermined area and at the same time produce the intensity of heat and rate of spread required to accomplish certain planned benefits to one or more objectives of wildlife management, grazing, hazard reduction, etc. Its objective is to employ fire scientifically to realize maximum benefits at minimum damage and acceptable cost.

PRIMITIVE RECREATION: Nonmotorized and undeveloped types of outdoor recreation activities.

PROPER USE: (1) A degree of utilization of current year's growth which, if continued, would achieve the management objectives and maintain or improve the long-term productivity of the site; or (2) the percentage a plant is utilized when the rangeland as a whole is properly utilized. Proper use varies with time and systems of grazing. Proper use is synonymous with proper utilization.

PUBLIC LAND: Vacant, unappropriated and unserved land that never left federal ownership; also, land in federal ownership obtained in exchange for public land or for timber on public land; land administered by the BLM.

PUBLIC PARTICIPATION: Part of the BLM's planning system that provides the opportunity for citizens as individuals or groups to express local, regional and national perspectives and concerns in the rulemaking, decisionmaking, inventory and planning processes for public land. This includes public meetings, hearings or advisory boards or panels that may review resource management proposals and offer suggestions or criticisms for the various alternatives considered.

PUBLIC VALUES: A cultural property is eligible for consideration as an interpretive exhibit-in-place, a subject of supervised participation in scientific or historical study or related educational and recreational uses by members of the general public.

RANGE IMPROVEMENT: An authorized activity or program on or relating to rangelands which is designed to improve production of forage; change vegetation composition; control patterns of use; provide water; stabilize soil and water conditions; and provide habitat for livestock, wild horses and burros, and wildlife. The term includes, but is not limited to, structures, treatment projects, and use of mechanical means to accomplish the desired results.

RANGELAND: A kind of land that supports vegetation useful for grazing or browsing, on which routine management of that vegetation is through manipulation of grazing rather than cultural practices. (Rangelands include natural grasslands, marshes, riparian zones, and wet meadows. Rangeland includes lands revegetated naturally or artificially to provide a plant cover which is managed like native vegetation.)

RANGE SITE: See ecological site.

RECREATION AND PUBLIC PURPOSES ACT (R&PP): This act authorizes the Secretary of the Interior to lease or convey public land for recreational and public purposes under specified conditions to states or their political subdivisions and to nonprofit corporations and associations.

RECREATION MANAGEMENT AREA (RMA): An area requiring explicit recreation management to achieve the bureau's recreation objectives and to provide specific recreation opportunities. Special management areas are identified in the RMP, which also defines the management objectives for the area. The BLM's recreation investments are concentrated in these areas.

RECREATION OPPORTUNITY SPECTRUM (ROS):

A conceptual framework for inventory, planning, and management of recreation resources.

RECREATIONAL OPPORTUNITY:

Those outdoor recreational activities which offer satisfaction in a particular physical, social and management setting in the EIS area. These activities are primarily hunting, fishing, wildlife viewing, photography, boating and camping.

REHABILITATION:

Restoration of damaged or lost environment as nearly as possible to its original state.

RESEARCH NATURAL AREA (RNA):

A natural area established and maintained for research and education, which may include (1) typical or unusual plant or animal types, associations or other biotic phenomena or (2) characteristic or outstanding geologic, soil or aquatic features or processes. The public may be excluded or restricted from such areas to protect studies.

RESOURCE AREA:

The smallest administrative subdivision of a BLM district.

RESOURCE MANAGEMENT PLAN (RMP):

A written lands use plan that outlines BLM's decisions and strategies for management of the resources in a particular area. The RMP replaces the MFP in BLM's planning system.

REST-ROTATION GRAZING SYSTEM:

A grazing plan providing for systematic and sequential grazing by livestock and resting from livestock use on a range area to provide for production of livestock while maintaining or improving the vegetation and soil fertility.

RIGHT-OF-WAY:

The legal right for use, occupancy, or access across land or water areas for a specified purpose or purposes. Also, the lands covered by such a right.

RIGHT-OF-WAY CORRIDOR:

The designation of an existing group of rights-of-way capable of accommodating one or more compatible rights-of-way of like kind. Such a corridor contains only public land.

RIPARIAN HABITAT (AREAS):

Areas of land directly influenced by permanent water and having visible characteristics, e.g., vegetation, reflective of the presence of permanent water, i.e., surface and/or subsurface.

SALABLE MINERALS:

Minerals such as common varieties of sand, stone, gravel, pumicite and clay that may be acquired under the Materials Act of 1947, as amended.

SALINE SOIL:

Soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

SALINITY:

A measure of total dissolved solids (TDS) including all inorganic material in solution, whether ionized or not.

SCENIC CORRIDOR:

The area encompassing the foreground-middleground zone along roadways.

SCENIC QUALITY:

The visual aesthetics of an area, based on the key factors: landforms, vegetation, color, water, influence of adjacent scenery, scarcity, and amount of cultural modification. It indicates the visual quality of an area relative to other scenery in the region. BLM ratings are A=exceptional/extraordinary; B=moderate; and C=low/common.

SCOPING PROCESS:

An early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action. Scoping may involve public meetings, field interviews with representatives of agencies and interest groups, discussions with resource specialists and managers, written comments in response to news releases, direct mailings and articles about the proposed action and scoping meetings.

SEASON OF USE:

The time of livestock grazing on a range area.

SEDIMENT:

Soil or mineral material transported by water and deposited in streams or other bodies of water.

SEDIMENT YIELD:

The total amount of eroded material that completes the journey from its source to a downstream control point, such as a reservoir.

SENSITIVE SOILS:

Soils that are erodible, have a relatively high content of clay and silt, and are slightly to moderately saline.

SENSITIVE SPECIES (PLANTS AND ANIMALS):

Species occurring on public lands and requiring special management attention to protect it and to prevent irreparable damage to the important resources or other natural systems or processes on which it depends. The sensitive list is made up of species

GLOSSARY

listed in category 3C in the Federal Register, Vol. 50 No. 188, September 27, 1985, page 39526.

SENSITIVITY LEVEL (VISUAL): An index of the response to visual change in an area based on such weighted criteria as social attitudes, amount of use, types of resource uses, management attitudes, etc. Levels are classified as high, medium, or low.

SERAL COMMUNITY: One of a series of biotic communities that follow one another in time on any given area. Seral community is synonymous with successional community and may be synonymous with seral stage and successional stage.

SERAL STAGE: See seral community.

SHRUB: A plant that has a persistent woody stem, a relatively low growth habitat, and generally produces several basal shoots instead of a single trunk.

SOCIOCULTURAL USE: A social and/or cultural group perceives that a cultural resources, place, structure or geographic location has characteristics which help maintain the group's heritage or identity.

SPECIAL MANAGEMENT AREA (SMA): An area receiving more intensive management for one or more resources, such as riparian, cultural or wildlife.

SPECIAL STATUS SPECIES: Wildlife and plant species either federally listed or proposed for listing as endangered or threatened, state-listed or BLM-determined priority species.

SPLIT ESTATE: The surface estate and the mineral estate of a parcel of land belong to different owners.

STABILIZATION (CULTURAL): Protective techniques usually applied to structures and ruins to keep them in their existing condition, prevent further deterioration, and provide structural safety without significant rebuilding.

STATE HISTORIC PRESERVATION OFFICER: The official who is appointed by the Governor to be responsible for administering the State Historic Preservation Program pursuant to Section 101(b)(1) of the National Historic Preservation Act.

STATE INDEMNITY SELECTION: Land owed to the state to replace land that the state would have received as a term of statehood but did not because the land was already appropriated under the public land laws or was within adjacent states.

STIPULATION: A requirement, usually dealing with protection of the environment, that is made a part of a lease, grant, or other authorizing document.

SUBSURFACE MINERALS: Minerals found below the earth's surface, including oil and gas.

THREATENED SPECIES: Any plant or animal species that is likely to become an endangered species throughout all or a significant portion of its range, as defined by the U.S. Fish and Wildlife Service under the authority of the Endangered Species Act of 1973.

TOPOGRAPHY: The relief and contour of the land, especially when taken collectively, as over a region or large area.

TOTAL DISSOLVED SOLIDS (TDS): All inorganic material in solution, whether ionized or not.

TOTAL SUSPENDED PARTICULATES (TSP): All solid or semisolid material found in the atmosphere.

TREND: The direction of change in range condition (ecological status or resource value ratings) observed over time.

TRESPASS: The use of public land without proper authority, resulting either from a willful or negligent act.

UTILIZATION: The proportion or degree of current year's forage production that is consumed or destroyed by animals (including insects). May refer to either a single plant species, a group of species, or the vegetation as a whole. Utilization is synonymous with use.

VEGETATION TYPE: A kind of existing plant community with distinguishable characteristics described in terms of the present vegetation that dominates the aspect by physiognomy of the area.

VISITOR DAY: Twelve visitor hours which may be aggregated continuously, intermittently, or simultaneously by one or more persons.

VISUAL DISTANCE ZONE: The normal distance of viewers from an area being viewed: foreground/middleground (up to 5 miles); background (up to 15 miles); and seldom seen (more than 15 miles or areas screened from normal viewpoints).

VISUAL ELEMENTS: The elements that determine how the character of a landscape is perceived. Form: the shapes of objects such as landforms or patterns in the landscape. Line: perceivable linear changes in contrast resulting from abrupt differences in form, color, and texture. Color: the reflected light of different wave lengths that enables the eye to differentiate otherwise identical objects. Texture: the visual result of variation in the surface of an object.

VISUAL RESOURCE MANAGEMENT (VRM)

CLASSES: Classification containing specific objectives for maintaining or enhancing visual resources, including the amount of acceptable change to the existing landscape to meet established visual goals.

WATER QUALITY: The chemical, physical and biological characteristics of water with respect to its suitability for a particular use.

WATER TABLE: The upper level of an unconfined underground water body.

WATERSHED: A total area of land above a given point on a waterway that contributes runoff water to the flow at that point.

WATERSHED CONDITION: An assessment, or categorization, of an allotment in terms of current erosion conditions, erosion hazards and the soil moisture/temperature regime.

WETLANDS: Lands including swamps, marshes, bogs, and similar areas such as wet meadows, river overflows, mud flats, and natural ponds.

WILDERNESS AREA: An area officially designated as wilderness by Congress. Wilderness areas will be managed to preserve wilderness characteristics and shall be devoted to the public purposes of conservation and recreational, scenic, scientific, educational, and historical uses.

WILDERNESS MANAGEMENT POLICY: The BLM policy that governs administration of public lands designated as wilderness areas by Congress. It is based on the Wilderness Act of 1964 and FLPMA of 1976. FLPMA requires a wilderness area to be a roadless area or island that has been inventoried and found to have wilderness characteristics as described in Section 603 of FLPMA and in Section 1(c) of the Wilderness Act.

WILDLIFE: All species of mammals, birds, fish, amphibians, and reptiles found in a wild state.

WILDLIFE HABITAT: All elements of a wild animal's environment necessary for completion of its life cycle, including food, cover, water, and living space.

WITHDRAWAL: An action that restricts the disposal of public land and holds it for specific public purposes; also, public land that has been dedicated to public purposes.



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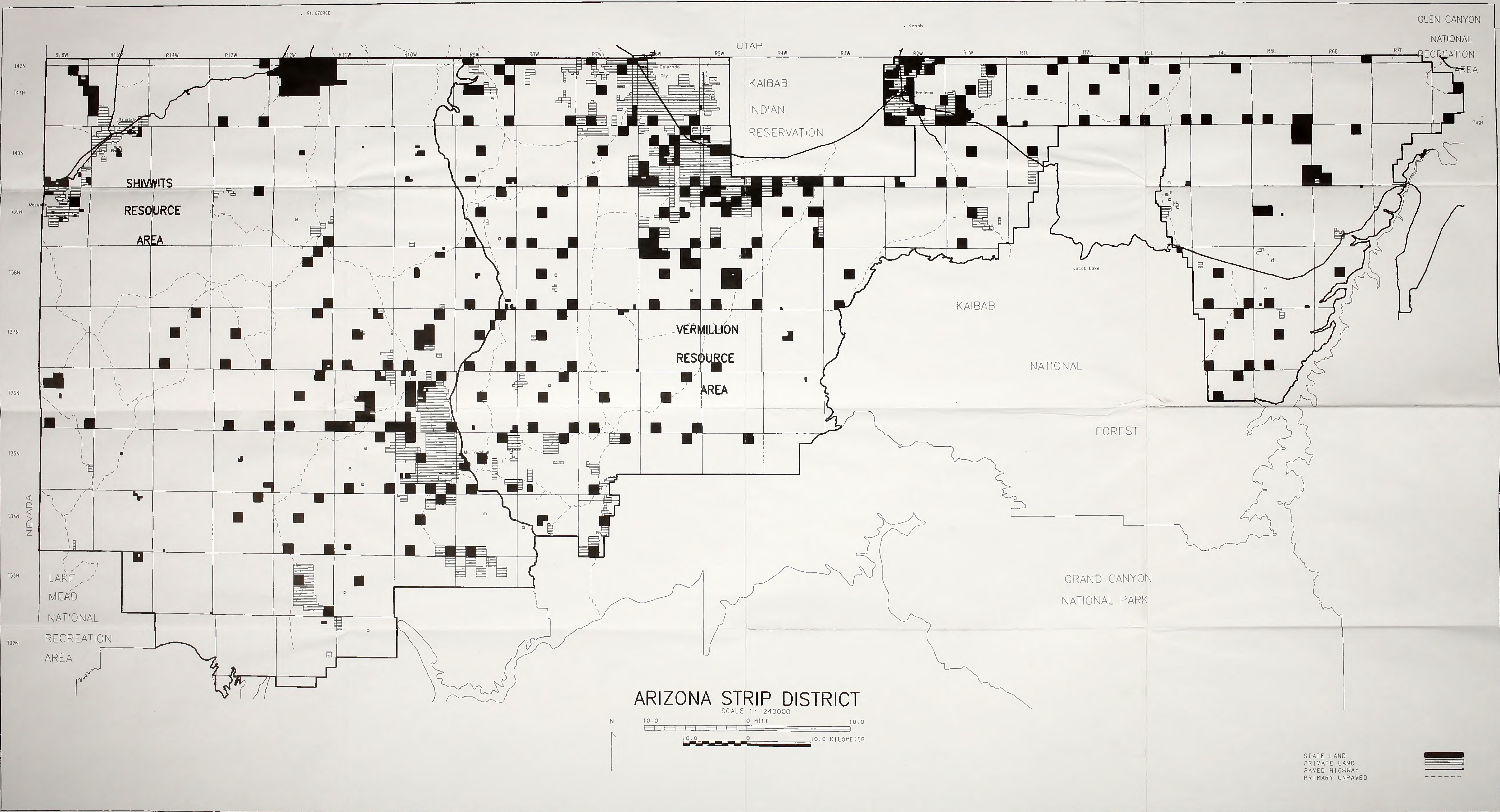
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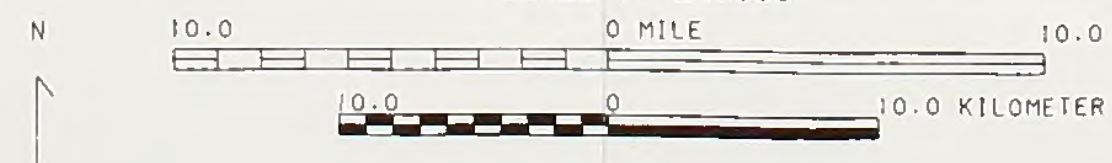
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